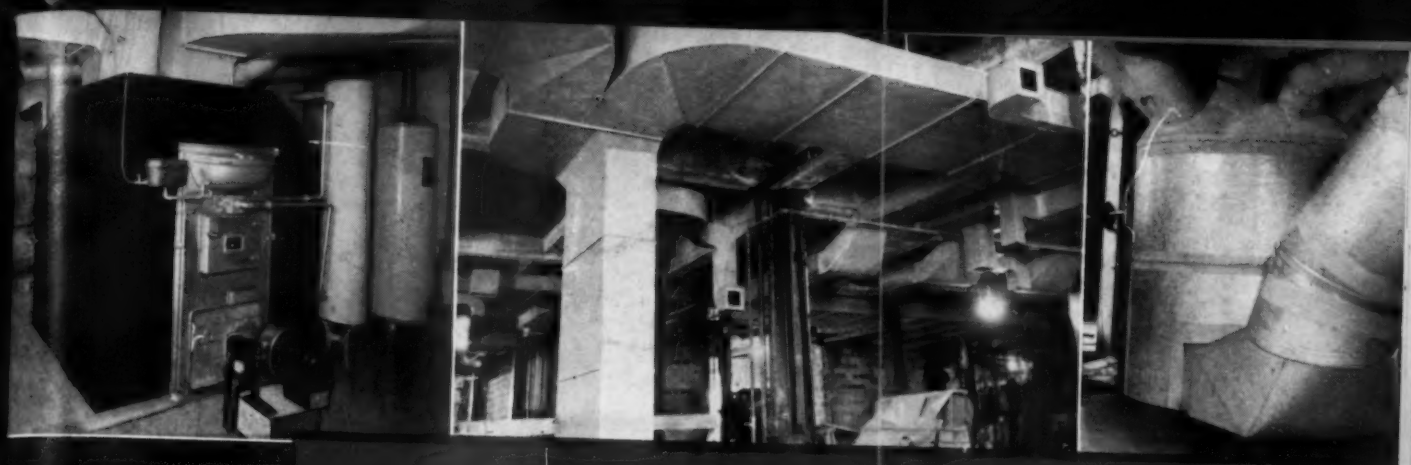

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING--SHEET METAL CONTRACTING

SEPTEMBER, 1945

When Must You Rehire the Veteran - - - - - - - Page 79
Heating and Cooling Tomorrow's House—With Gas - - - Page 97
Fundamentals of Narrow Edge Bending - - - - - - Page 110

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J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 114, No. 9 — September, 1945 — Founded 1880

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In This Issue

FOUR very important problems of the day are discussed in this issue. Number 1 is the first of several articles describing the pro's and con's of Partnership vs. Corporation as a way of doing business in the post war era. This article, beginning on page 70, presents the legal responsibilities of each form.

Number 2 article (page 72) covers the much discussed social problem—"If Business Can't, Government Must Make Jobs." As an employer you will hear this idea propounded in the months to come. Is the thesis possible and if not, why not, is fully discussed in this article from Tax Foundation.

Number 3, on page 75, is Arnold Kruckman's second article on "labor." This one describes how CIO came into being and the very clear cut differences between CIO's and AFL's present day policies. No right thinking employer ignores the problem of labor relations—hence, Mr. Kruckman's analysis of the unions financial status, the powerful figures who head the unions, and the attitude of the unions toward present day legislation is timely.

Number 4 is—"When Must You Rehire the Veteran" (page 79). The veteran's right to his job and your obligation to give his job back are explained in detail.

•

Of all the headaches engineers encounter in designing a house heating plan, none is more bothersome than register location, type and size. Professor Konzo, on page 92, shows how much easier it is to decide these problems using the New Code and Manual than it ever was with previous Codes or individual notions.

"Getting the Most Out of Your Pressbrake" by Ernest Zideck has proved to be one of the most informative series of articles AA has ever published. The article in this issue—"Fundamentals of Narrow Edge Bending," page 110, explains how to avoid the pitfalls often encountered in bending narrow flanges when the operator is not completely familiar with press brake work.

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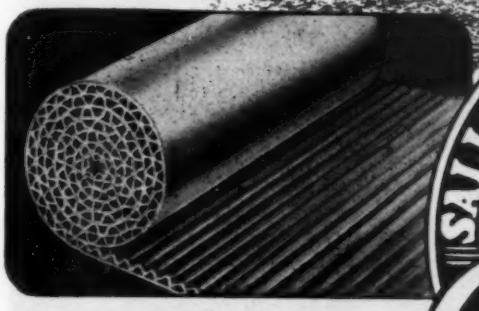

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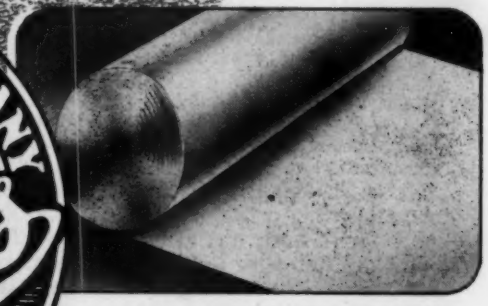

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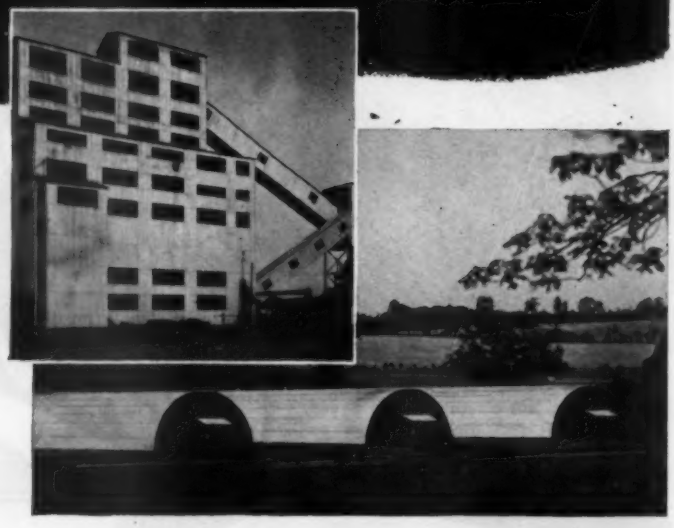

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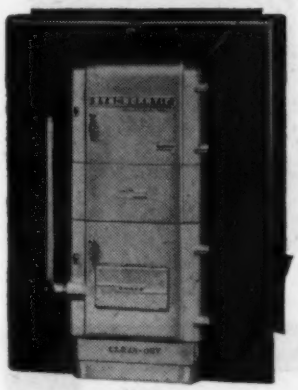

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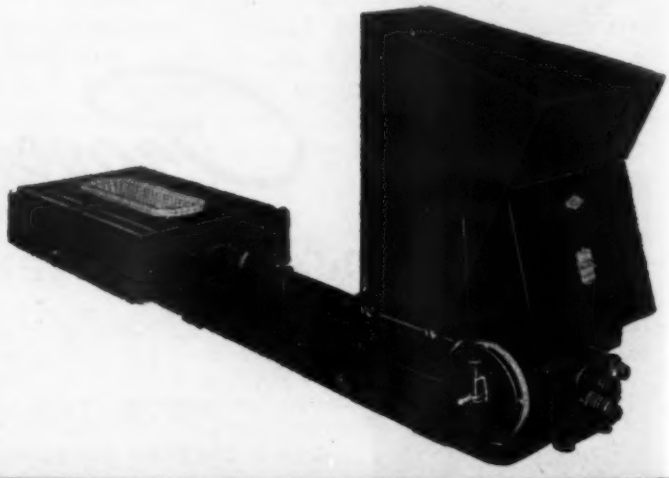

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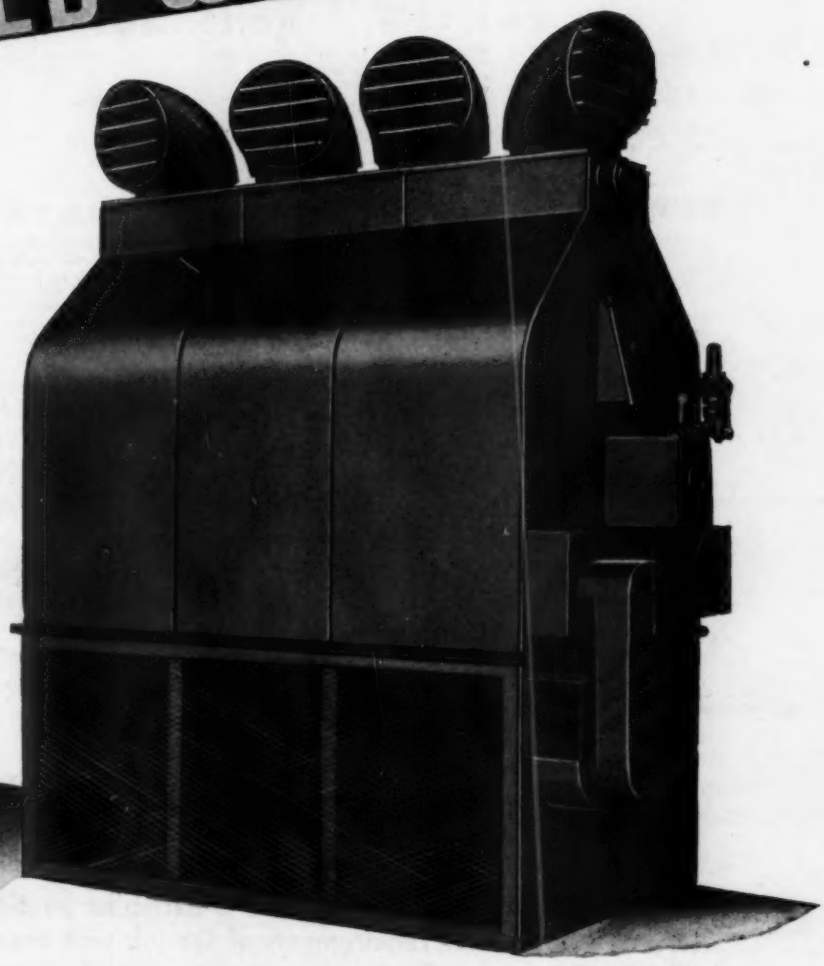

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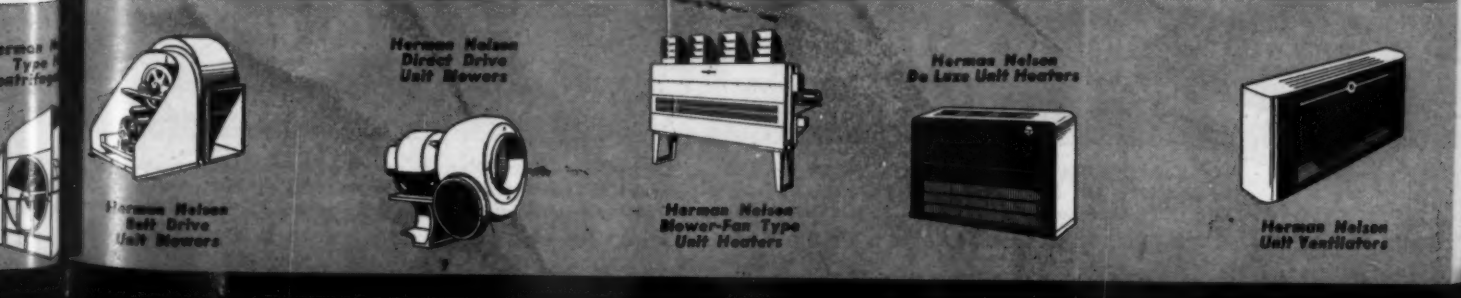
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FREE SMOKE PASSAGE

NO OTHER DRAFT CONTROL LIKE IT

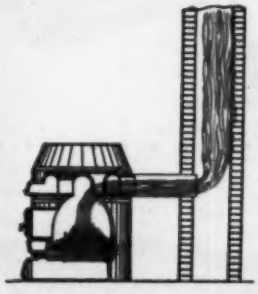
And here's what these exclusive, fully patented design features mean to you; ROCKER TYPE FULCRUM — the hinge pin rolling in slots instead of twisting in journals means *less friction*, no binding, no oiling, no corrosion. OFF-CENTER GATE MOUNTING — gate moves closely between two side wings, for uniform opening; barometric pressure operates on a greater effective area. Control is highly sensitive, yet ruggedly built. EXTENDED HOUSING — places gate outside the flow of heat and soot; no fouling, no warping. Yes, there is a *reason* why leading heating equipment manufacturers have picked FIELD as standard equipment.

FIELD CONTROL DIVISION, H. D. CONKEY & CO.
MENDOTA, ILLINOIS

field

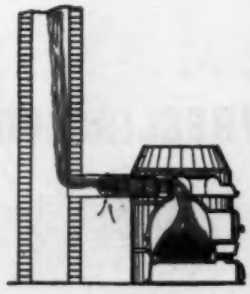
Barometric DRAFT CONTROLS

TWO SIMPLE ILLUSTRATIONS PROVE THE NEED FOR A FIELD DRAFT CONTROL



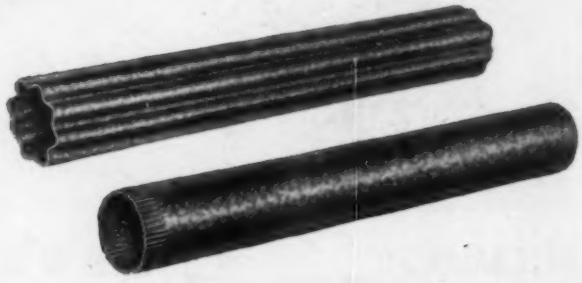
The diagram at left illustrates what takes place in the average heating plant not equipped with a FIELD DRAFT CONTROL. When the chimney draft is greater than necessary for proper draft and combustion, heat is drawn up through the chimney and wasted. Heat losses range up to 25%!

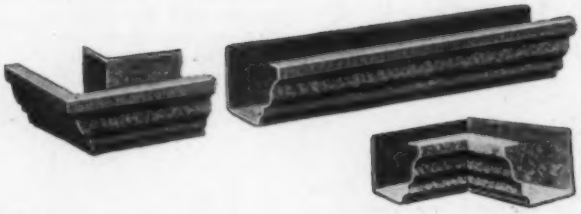
At the right we picture for you the change effected when a FIELD DRAFT CONTROL is installed. The barometric pressure opens the gate, maintaining the proper draft to carry smoke up the chimney, but withdrawing excess draft through the opening created by the pressure of air upon the gate. Fuel savings range up to 25%!

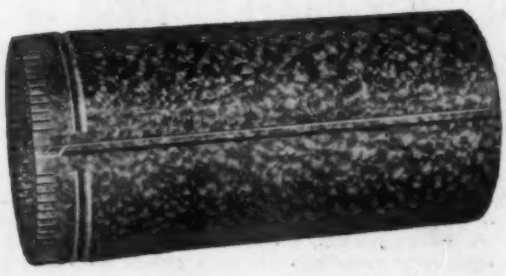


The Need is Great–

for these fundamental accessories to make the repair to old premises and to equip the newly planned building. Wheeling Conductor Pipe, Eavestrough and hundreds of sheet steel and wire products, including Steelcrete Expanded Metal, backed by 55 years of successful quality manufacture, direct you to Wheeling.







WHEELING CORRUGATING COMPANY ***Wheeling, West Virginia***

New York · Philadelphia · Chicago · St. Louis · Richmond · Atlanta · Kansas City · Minneapolis

Wheeling CORRUGATING COMPANY

Steelcrete

Buffalo · Louisville · Detroit · Boston · New Orleans · Cleveland · Pittsburgh · Houston

VIKING'S

SOUND MERCHANDISING POLICY

SALES THROUGH DISTRIBUTORS ONLY

Viking sells through capable, aggressive Distributors ONLY—because the Distributor's organization can most expertly and economically perform the services of purchasing, warehousing, delivery, material scheduling, sales promotion and sales financing for a group of Dealers—thus saving each Viking dealer the time and expense of handling these details.

FOR GREATER DEALER PROFITS

The Viking Contractor-Dealer who can devote all his efforts to doing a better job for his customers, builds a better business for himself. All of his time and finances are available for planning, installation and maintenance services — services which only he is able to offer. Every minute he saves from other details is another minute on the job — a more profitable minute for his business.

THE COMPLETE VIKING LINE

The customer demands to be warm in winter and cool in summer. Viking manufactures every type of equipment the Dealer needs to meet that big demand. When the customer has selected the Viking unit he wants, the Viking Distributor supplies the Dealer with the unit and all the necessary application material from his inventory.

Supported by this complete Distributor service, and Viking's outstanding line of heating, cooling and air-conditioning equipment, the Viking Dealership is a most profitable business venture.

Here's Why

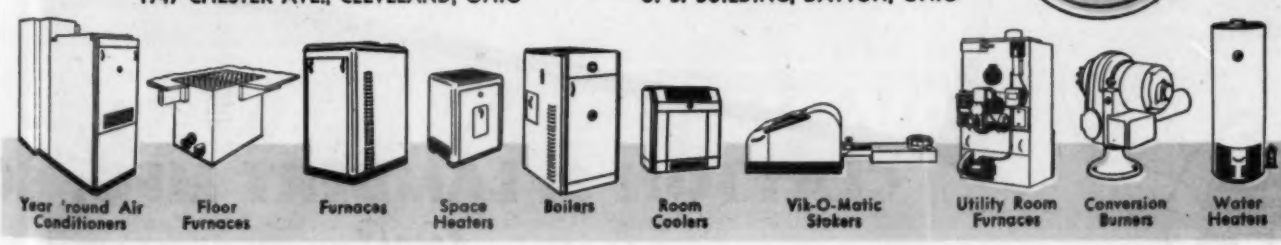
The installation of even a simple warm air job is done piece-meal. When the house is framed some of the duct work is installed; when the house is plastered the heating unit is needed to help dry out the plaster. As the trim is installed the register faces are placed. When the house is completed the entire unit is hooked up, adjusted, and the system balanced.

The contractor-dealer, therefore, has this single job split into 5 or 6 phases, each requiring but a portion of the total material at any one time. Material for any part of the job is promptly available from the Distributor's inventory whenever the Dealer needs it. The Dealer's money is thus not invested until he is ready for the material. The Dealer is not called upon to store materials pending its need.

Financing of material to be needed later for the job, carrying the inventory, delivering the units, are conveniences the Distributor provides most economically because these services are his specialty — the basis of his support to the Viking Dealers.

VIKING MFG. CORPORATION

1747 CHESTER AVE., CLEVELAND, OHIO U. B. BUILDING, DAYTON, OHIO



LAMNECK FITTINGS WILL ALWAYS BE TOPS

What More Can We Say?

LAMNECK FITTINGS

C&L **CLAYTON & LAMBERT MFG. CO.**

Middletown Division

INTEROFFICE MEMO

To: General Manager

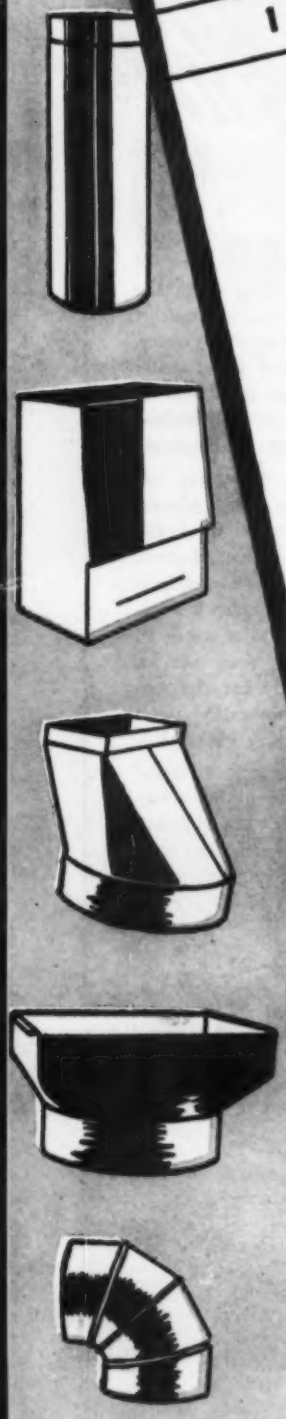
From: Advertising Manager

Subject: Announcement About Simplified Duct and Fittings

Now we can announce to the trade that we are soon going to have more Lamneck duct and fittings . . . and also a lot more galvanized gravity fittings.

Our loyal jobbers who have stuck with us for the duration of the war, with little or nothing of our line to sell, deserve a big hand for their support.

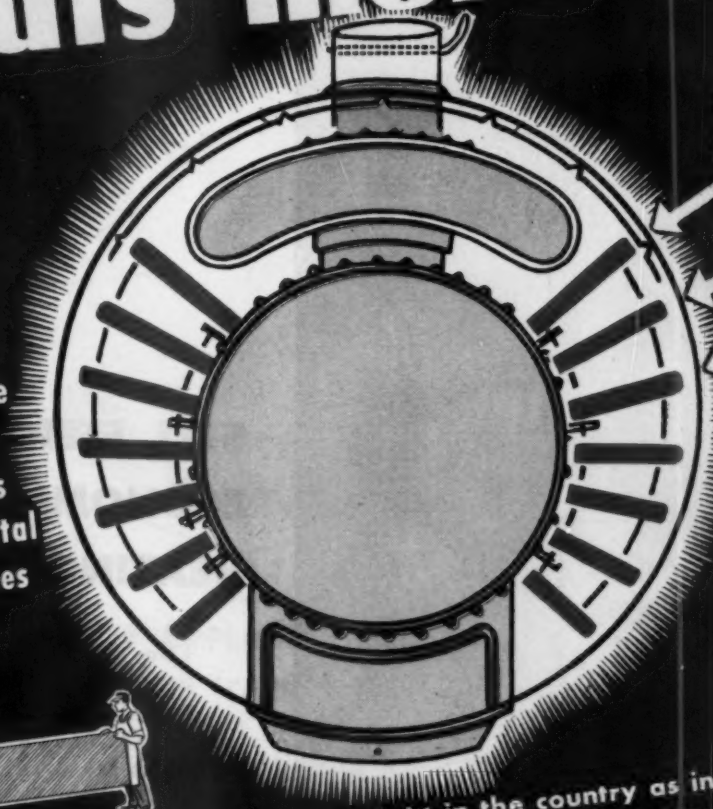
It won't be long until their shelves can again be stocked. WE CAN TELL THEM NOW . . . that we are fighting for material, our war contracts are cancelled and we are ready to go.



CLAYTON & LAMBERT MFG. CO

Middletown Division C&L Middletown, O

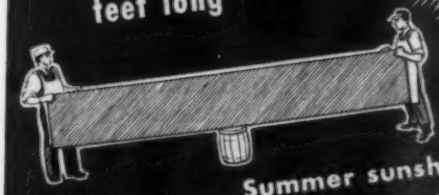
.more HOT metal
IN VICTOR EXCLUSIVE HEAT RADIATING FINS
heats more air.

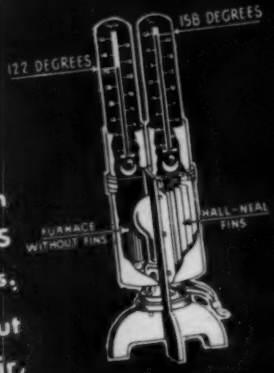


Prospects
SEE THE EXTRA
Heating Surface
in VICTOR

Table Top
Demonstrator
Clinches Sales

The *EXTRA*
Heating Surface
in the 24-inch
VICTOR is
equal to a metal
sheet 30 inches
wide and 23
feet long





Summer sunshine is just as bright in the country as in town. But city AIR is HOTTER—much hotter—because it RUBS on more hot SURFACES—hot pavements, hot roofs, hot walls. Radiant heat passes *through* the air without heating it. But wherever it strikes a surface, it *heats* that surface. And air, RUBBING on the surface, picks up the heat.

Whether it's outdoor city air in summer, or air inside a furnace casing in winter, *more hot surfaces heat more air.*

That's why the exclusive and patented VICTOR Fin Surfaces increase efficiency, save fuel—and build profitable business for heating contractors.

DEALERS: Write us for full information NOW!

HALL-NEAL FURNACE CO.

VICTOR *Quality Furnaces Since 1890*

1326 N. CAPITOL AVENUE . INDIANAPOLIS 7, INDIANA

Now is the Time to Apply for the Gar Wood Franchise

There are still some choice territories available.

Write for the new booklet "Why You Should Be a Gar Wood Dealer"

GAR WOOD GW HEATING EQUIPMENT TRADE MARK

SELL EFFICIENT ECONOMICAL Gar Wood HEATING UNITS

The new, completely automatic Tempered-Aire Heating Units are designed to meet the heating requirements of the average American home . . . and to do this in the most efficient, most economical manner known. They have beautiful new cabinets, new mechanical improvements and many other new features but basically, the principles are the same that have made Tempered-Aire famous for outstanding performance in thousands of homes. Remember that Tempered-Aire is tried and proven . . . backed up by many years experience.

OTHER Gar Wood Heating Units include: Boiler Burner Units (steam or water), Conversion Burners, Indirect Cabinets and Water Heaters.

GAR WOOD INDUSTRIES, INC., HEATING DIVISION

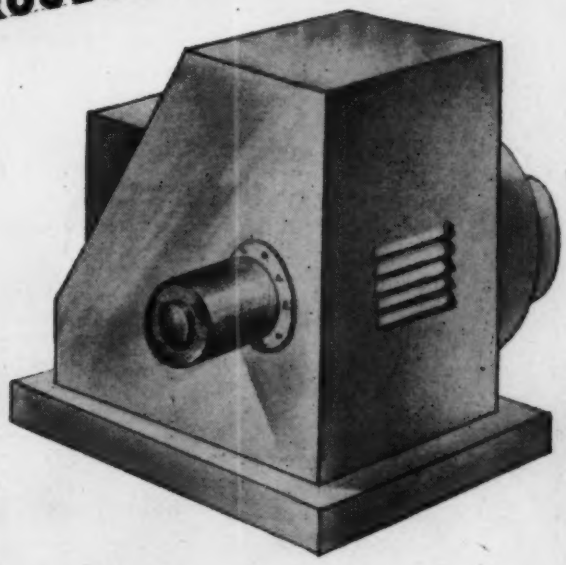
7924 RIOPELLE STREET DETROIT 11, MICHIGAN

Canadian Distributors: Engineering Industries, Ltd., 282 Dupont St., Toronto, Ont.

HOISTS and BODIES . . . WINCHES and CRANES . . . TANKS . . . ROAD MACHINERY . . . MOTOR BOATS

FIT THE MOTOR IN YOUR PLANS

. . . AND AVOID TROUBLE IN PRODUCTION!



ASK A WESTINGHOUSE APPLICATION ENGINEER

NOW . . . BEFORE YOU "FREEZE" DESIGN

After your appliance is ready for production is a poor time to apply the motor. Do it while your designs are still in the planning stage. Double check to make certain that you have the right motor for the job. A minor change now may enable you to use an existing design, and avoid the extra engineering of a "special".

Westinghouse standardized motor designs offer many advantages, such as lower costs, faster deliveries, speedier production of appliances, lower inventory stock and simplified servicing.

Westinghouse engineering has resulted in many extra features built into standard motors for specialized service requirements. The service of Westinghouse application engineers is available at any time to help you meet your problems. Simply call the nearest office, or write Westinghouse Electric Corporation, Lima, Ohio. J-03228

MOTOR EXCHANGE PLAN PROVIDES

REPLACEMENT SERVICE IN 24 HOURS OR LESS

ANYWHERE IN THE UNITED STATES

Westinghouse Motor Exchange points in all principal cities can service most Westinghouse small motors of standard sizes in 24 hours, or less, anywhere in the United States. This service gives the appliance user an efficient, factory-rebuilt replacement motor in exchange for his old motor at a low, flat cost. Your nearest Westinghouse office will give you full details. Ask for bulletin B-3336.

Westinghouse

SMALL MOTOR DIVISION

Nelson *Automatic* Stud Welding saves time and material!

Nelson Stud Welding saves time and material because it eliminates drilling holes and tapping to secure studs. In *less than a second* studs from ⅛" to ¾" diameter are secured. Automatic operation and accurate arc timing control produce complete fusion of the stud to metal. Operators are trained quickly and produce consistent results.

Thousands of stud welders are now used by more than 750 industrial plants and shipyards . . . because 500 to 1000 studs per operator can be secured per shift.

For rapid *precision* production of stud welded parts single and multiple stud welding units are available which weld one or more studs of various sizes at the rate of 20 to 30 welds per minute.

Write today for complete information on this time and material-saving equipment:

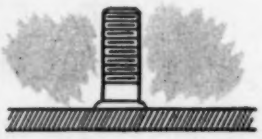
NELSON SPECIALTY WELDING EQUIPMENT CORP.

Dept. AA, 440 Peralta Avenue
San Leandro, California

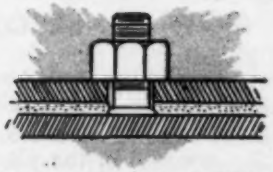
Eastern Representative: Camden Stud Welding Corp., 1416 South Sixth Street, Camden, N. J.

HOW NELSON STUDS ELIMINATE DRILLING AND TAPPING

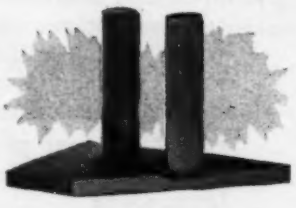
After layout and center-punching a stud is placed in the gun chuck. The pointed end is located in the punch mark and the trigger pulled. Instantly the arc flashes and the weld is made. The operator loads again and proceeds to the next weld.



Complete fusion between stud and metal results . . . drilling and tapping operations have been eliminated.



Cover and gasket fit easily and a neater result is obtained. One gun welds any diameter stud — a standard welding machine is used.



Cutaway of typical stud weld. Etched with Nital to show penetration.

Heating and Maintenance Costs average only $65.09 a season per apartment

Here's actual proof of Janitrol's practicability and economy of operation for multiple dwelling units.

Factory-packaged, this type of Janitrol unit keeps installation costs down to a minimum. This ease and flexibility of installation also makes for savings in building costs.

When the best in gas heat is required for large multiple installations, for smaller apartments or individual houses, remember Janitrol wins by all comparisons. To plan now to represent Janitrol, write for facts on the complete Janitrol line and dealer franchise. Surface Combustion Corporation, Toledo 1, Ohio.

CITY OF HAMTRAMCK

OFFICE OF
HAMTRAMCK HOMES COMMISSION
Col. Hamtramck Homes • 12023 Beaubien Ave.

July 24, 1945

Surface Combustion Corporation
2375 Dorr Street
Toledo 1, Ohio

Gentlemen:

In answer to your recent letter I would say that we are entirely satisfied with Janitrol Gas Furnaces.

As you know, we have 300 of these units, one to each housing unit, of our project, which were installed late in 1941.

I would unhesitatingly recommend Janitrol heating equipment for multiple dwellings wherever there is a reasonable gas rate.

For your information, our records, over the last two years, show the following costs:

	Total Heating Costs	Cost Per Unit	Total Maintenance Cost	Maintenance Cost Per Unit
1943	$19,765.74	$65.89	$930.38	$3.10
1944	17,664.83	58.88	693.80	2.31

By including maintenance and labor with actual costs of fuel, I believe the above records will compare very favorably with any other type of heating.

In addition, we secure the benefits of greater cleanliness, even temperature for our tenants, and the freedom from ordering and handling of fuel.

Yours very truly,

HAMTRAMCK HOUSING COMMISSION

Stanley J. Wojcik
Director-Secretary

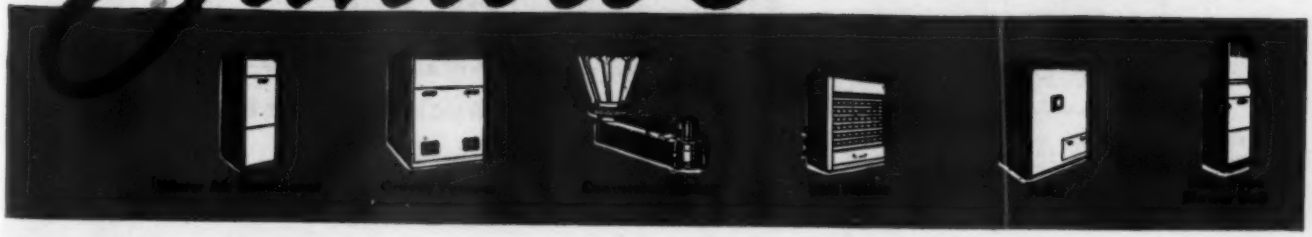
SJW:hh

Buildings are varied in size to contain modern, well planned dwelling units for 4, 6, 8, 10 or 12 families. Apartments vary in size from 3½ to 6½ rooms.

Compact Janitrol Forced Warm Air Furnace fits in "closet-size" space. Unit only occupies 18" by 27" floor area.

Hamtramck Housing Project completed in 1941 is located in industrial section northeast of Detroit, Michigan. Project covers 16 acres, provides modern housing for 300 families.

Janitrol GAS-FIRED HEATING EQUIPMENT



WATCO ENGINEERING · INC.
Engineers and Designers
HEATING AND AIR CONDITIONING DIVISION
2200 SCRANTON ROAD
CLEVELAND 13, OHIO

REPLY TO
HANNA BUILDING
CLEVELAND 15, OHIO

AN OPEN LETTER TO

September 10, 1945

The Warm Air Heating and
Air Conditioning Industry

Gentlemen:

It is with pride that we announce the new WATCO line of oil and gas fired WINTER AIR CONDITIONING as well as the new WATCO line of unit ROOM COOLERS. Both have been designed and developed with two thoughts in mind --- better products for better living in America, and the profit possibilities for both the Wholesaler and Key Dealer.

We will, from time to time write other open letters to you on the subjects in which you are most vitally interested, PRODUCT --- POLICY --- PRICE.

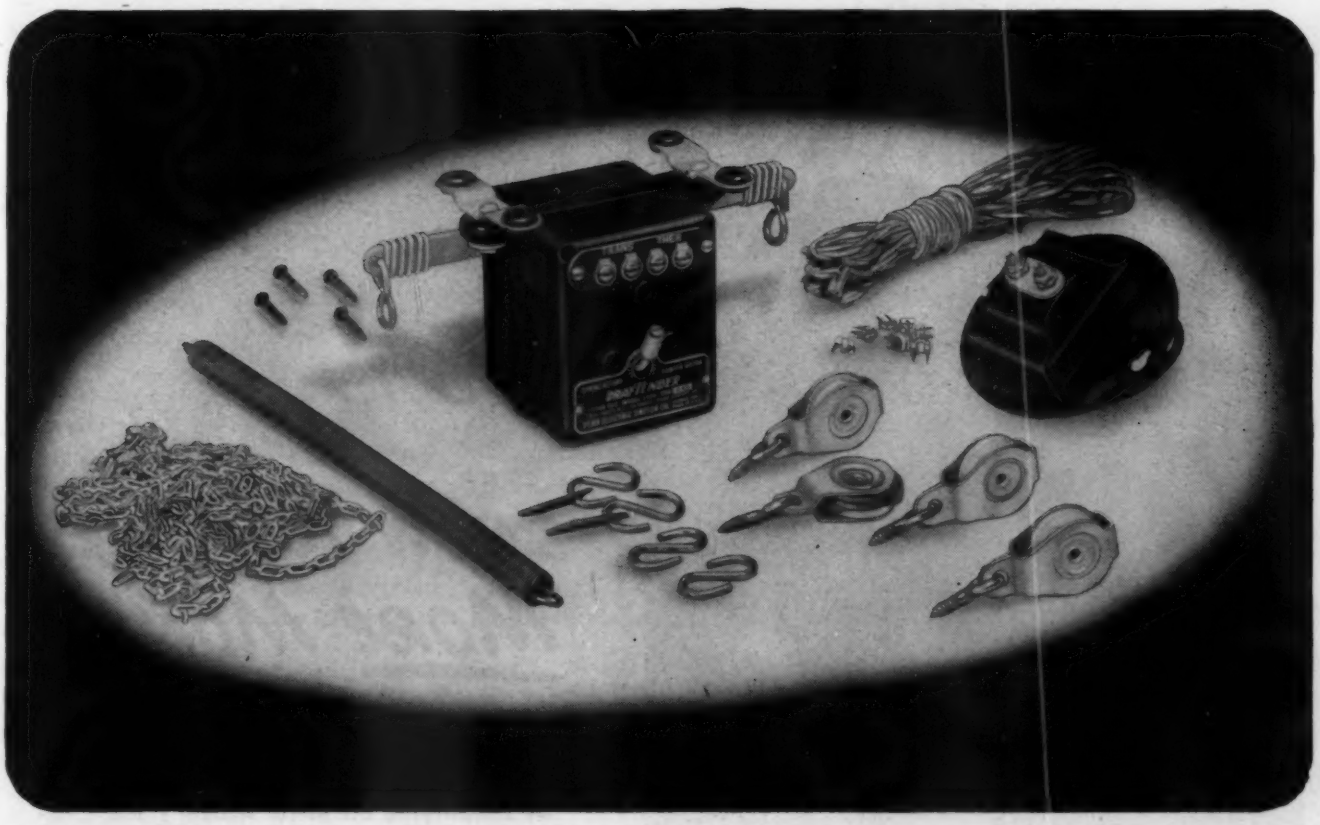
We invite inquiries from WHOLESALERS, whose sales records will bear investigation. We say this because we are only interested in those WHOLESALERS who will do the kind of a selling job the WATCO lines demand.

May we have your prompt response?

Yours for PROFIT,

WATCO ENGINEERING, INC.

BY F. W. Watkins, President

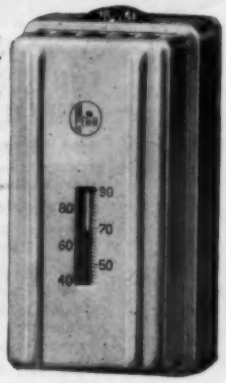


Weapons to Combat Fuel Waste . . . Draftender Controls

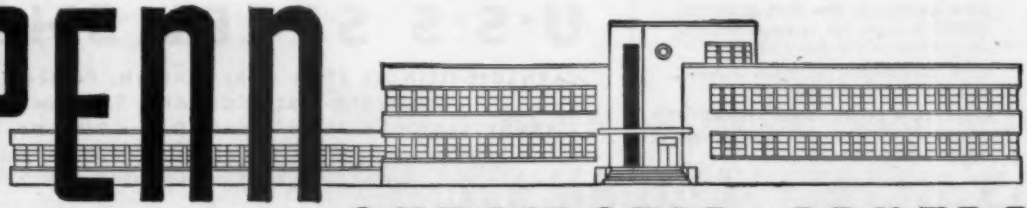
• There's a tough winter ahead . . . with coal scarcer than ever before! It will be necessary to make every lump of coal count. That's why PENN Draftender Controls are essential to every hand-fired heating system. By cutting fuel waste . . . they stretch coal supplies as far as possible.

PENN Draftender Control DM-1 Sets include, in addition to the damper motor and necessary accessories, PENN Temtrol—the heat-anticipating thermostat. They are available now . . . *for prompt delivery.* Equip *any* hand-fired plant with these controls . . . and you'll help the owner conserve vital fuel. They eliminate the waste of overheating, common with hand-controlled dampers.

While PENN Draftender Controls are saving fuel . . . *they'll be building future business for you, too!* They'll be introducing the owners of these hand-fired plants to the *comfort* and *convenience* of thermostatic control. Thus, these homeowners will become ripe prospects for a completely automatic heating system.



Remember by selling Draftender Controls you're helping yourself . . . your customer . . . and you're tying-in with the government's fuel-saving program. Order Draftender Control DM-1 Sets from your local wholesaler today. If you desire further information, write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U.S.A. In Canada: Powerlite Devices, Ltd., Toronto, Ont.



PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

EVERY SUNDAY EVENING, United States Steel presents *The Theatre Guild on the Air.* American Broadcasting Company coast-to-coast network. Consult your newspaper for time and station.

HOW TO MAKE MORE MONEY

and keep your customers satisfied

● **By Simplifying the Metal Worker's Job.** Selling prices are based on cost of materials, plus labor, plus manufacturing time. Any savings in these items contribute to your profits per job.

U·S·S Steel Sheets enable you to cut time and cut costs by speeding up shop practices. Made to meet the exacting requirements of sheet metal workers, these sheets are uniform in surface, in flatness, in durability and in forming qualities. They bend, roll, cut, shear, weld and machine exceptionally well . . . advantages that put you in better position to handle a bigger, more profitable share of peacetime business.

● **By Featuring the Best-Known Trade-Mark.** United States Steel, through consistent advertising in more than 150 publications, has kept right on selling the idea of quality steels to your customers during the war years. The U·S·S trademark is today the best-known symbol of quality in the entire industry.

The fact that you handle U·S·S Steel Sheets therefore lends added prestige to your good name, wins customer satisfaction, and goes far to help you land profitable contracts in the competitive period ahead.

For successful, profitable sheet metal work, for ready customer-acceptance, stock the *best-known* steel sheets—those bearing the U·S·S trade-mark.

U·S·S STEELS FOR SUCCESSFUL SHEET METAL WORKMANSHIP

U·S·S GALVANIZED STEEL for sheet metal structures requiring the added protection of a zinc coating.

U·S·S COPPER STEEL to give twice the atmospheric corrosion resistance of regular steel at little additional cost.

U·S·S DUL-KOTE—A dull-surfaced galvanized sheet and U·S·S PAINTBOND—a Bonderized, galvanized sheet, both specially prepared for immediate painting and better paint adherence.

U·S·S HOT-ROLLED AND COLD-ROLLED STEEL to provide the basic advantages of steel, plus maximum economy, in accordance with the needs of each individual job.

U·S·S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S VITRENAMEL — Sheets designed especially for porcelain enameling.

U·S·S LOW-ALLOY, HIGH-STRENGTH STEELS to resist corrosion and increase strength-weight ratio.

U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

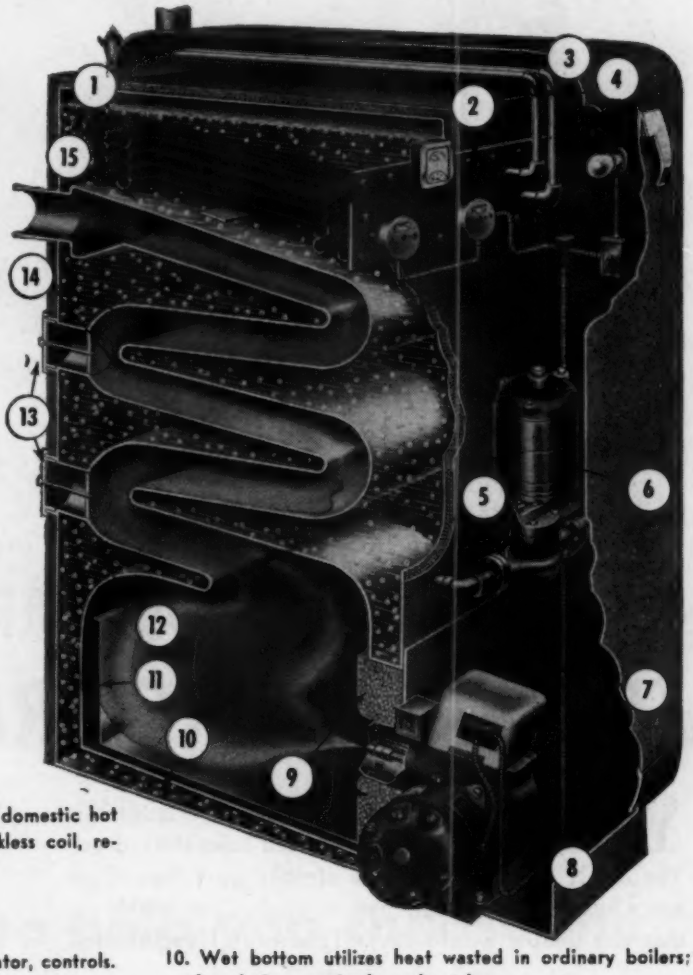
ON THE WAY.... AHEAD OF THE FIELD!

**This trade mark represents the complete line of automatic gas or oil-fired heating units made by Penn Boiler & Burner Mfg. Corp.*

Packaged Heat Units, gas or oil-fired, are "pick-up, set-down, plug-in" appliances. There's a size and type to heat a six room house or a small church. The complete line includes Winter Air Conditioner Units, Boiler-Burner Units, Split System Units and Penngun Water Heaters. All are factory fabricated . . . 100%. They require only connection of smoke breeching, fuel, water and electric lines. This is the entire extent of basement assembly.

The advantages of Penn Packaged Heat Units . . . in sales, inventory, service and installation place them far ahead of the field. The engineering advance you see here in the cut-away production model of the Boiler-Burner Unit are typical of the complete line.

For the full story and franchise possibilities, write for our new booklet, "On The Way . . ."



1. Instantaneous tankless coil for year-round domestic hot water. Coilplates available for tank or tankless coil, replaceable at $6.00 to $8.00.

2. Removable coilplate carries controls.

3. Patented boiler wing houses burner, circulator, controls. Built as integral part of self-contained unit.

4. Electric light for ease of inspection.

5. Boiler wall "belly" for extra water capacity speeds recovery of tankless coil; stores more heat units.

6. Bell & Gossett circulator optional as part of Packaged Heat Boiler-Burner unit.

7. Factory installed wiring connects all controls.

8. Penn built pressure type burner specially designed and balanced as integral part of the unit.

9. One-piece combined refractory and insulating brick front; inexpensive to replace.

10. Wet bottom utilizes heat wasted in ordinary boilers; no foundation required; no heat loss.

11. Stainless steel fire-box for instant heat transfer; lowers stack temperature, cuts down running time.

12. Extra baffle here adds two fire travels to most important surfaces in any heating unit.

13. Clean-out access doors to all flues; to clean push and pull dirt into fire box and burn.

14. Backward-forward fire travel increases efficiency; graduated flues utilize gases fully; lower stack and increase percentage of CO_2.

15. Water chilled by domestic coil flows over sloping crown sheet to aquastat for immediate response.

Interested in a franchise? Use your letterhead to ask for our status story. It tells just where we stand today.

PENN BOILER and BURNER MANUFACTURING CORP.

LANCASTER, PENNSYLVANIA

YOU were the "silent partner"

... when the BIG POSTWAR PUSH was planned for TEMCO and CIRCU-RAY Gas Space Heaters

YES, throughout the war, research and experimentation have been going on—behind closed laboratory doors. The object was to improve an already good line of gas space heaters . . . to make them so good . . . so salable . . . that any dealer would say, "That's the line for *me*."

So *TEMCO* and *CIRCU-RAY* space heaters were re-engineered . . . redesigned. The result is that, when manufacturing conditions permit, we will offer progressive dealers the most attractive and most efficient gas heaters we have ever built.

QUICK FACTS about the new FORCED-AIR MODELS

ENGINEERED to include new features developed in wartime experimentation.

DESIGNED to harmonize with the beauty of modern home furnishings.

FULLY AUTOMATIC—Built-in Thermostatic Temperature Control . . . 100% Safety Pilot . . . and Pressure Regulator.

AUTOMATIC SLOW-SPEED FAN assures silent operation and even heat distribution.

COMPACT—Increased heating efficiency through forced circulation makes possible a relatively small cabinet with high B. T. U. output. Cabinets finished in Porcelain Enamel, the "Lifetime Finish".

- **PORCELAIN ENAMEL CABINETS**
- **MODERN DESIGN**
- **PROVEN HEATING ABILITY**
- **A.G.A. APPROVED**

WIDE SELECTION . . . A size and model for every heating requirement—Venteds, Unventeds . . . both Radiant and Circulating . . . Gravity and Forced-air Types.

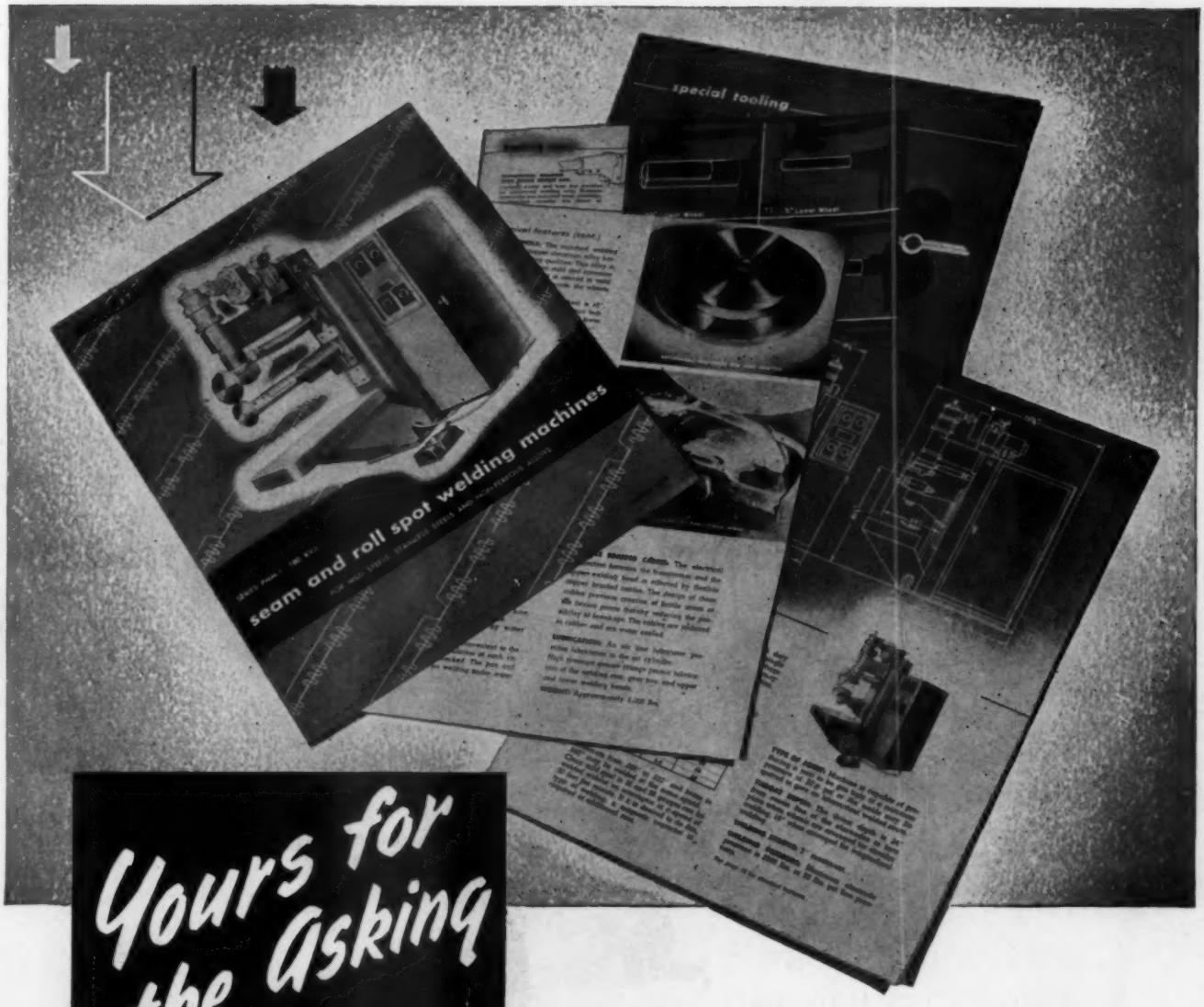
TENNESSEE ENAMEL MFG. COMPANY
Nashville 9, Tenn.

TEMCO also manufactures a complete line of Gas FLOOR FURNACES, post-war designed for topnotch heating efficiency and economy of operation.

FOUR AWARDS

TEMCO & CIRCU-RAY SPACE HEATERS

For installations beyond the gas mains, ask for BU-PRO-FIRE, a line designed especially for use with L. P. (Liquefied Petroleum) gases.



Yours for the Asking

to help you choose the right seam welder for the job

THIS 24 page booklet fully describes 3 of Sciaky's new 180 KVA seam welders. Included is much general information, tooling data and application suggestions. ***Seam welding*** can produce pressure-tight lap joints or a series of closely spaced spot welds at ***great speed.*** The booklet is designed to help you fit this fast, modern fabricating method into your production problems.

Sciaky machines are built with the stamina of a machine tool . . . to stand up under day in and out operation. Control is entirely electronic and the welder is a complete, self contained unit.

Just fill in and mail the coupon for your copy of bulletin 113-A.

SCIAKY BROS.

Sciaky Bros. AA
4915 W. 67th St.
Chicago 38, Ill.

Yes, please send your bulletin No. 113-A, describing the new Sciaky 180 KVA Seam Welders.

Name_____ **Position**_____

Company_____

Address_____

City_____ **State**_____

Will this furnace automatically adjust itself to meet varying conditions?
Will this furnace distribute heat evenly from floor to ceiling, with less than 4-degree variation?
Will this furnace automatically adjust the blower speed as needed?

WILL YOU HAVE THE *Answers* . .

WHEN YOUR CUSTOMERS ASK THESE QUESTIONS?

Does this furnace deliver continuous heat circulation rather than "on and off"?
Will this furnace do away with the "frigid leg zone"?

Furnace selling is due for a big change. Postwar customers will want complete freedom from furnace tending chores. The automatic, constant-heat furnace is destined to capture consumer demand.

No other line of furnaces offers more completely automatic operation—more accurately controlled heat level—than Superfex. And Perfection's "Furnace of the Future" *has been tested in thousands of homes.* Every single advanced feature has been *proved* by years of unlimited performance.

You will want to know all about the Superfex Furnace. We'll be glad to answer your inquiries.

Superfex FURNACES

BALANCED HEATING · ALL AROUND THE CLOCK

PERFECTION STOVE COMPANY

7796-B Platt Avenue • Cleveland 4, Ohio

BUY WAR BONDS AND KEEP THEM!

A COMPLETE LINE OF WINTER AIR CONDITIONING FURNACES FOR OIL AND GAS

WAR DEMANDS FIRST IN EVERYTHING

1ST

IN ··· QUALITY
ACCURACY
DURABILITY
PERFORMANCE
DEPENDABILITY
SAFETY FEATURES
EASY INSTALLATION
QUICK ADJUSTMENTS
SIMPLIFIED WIRING
UNFAILING SERVICE
WAR PRIORITIES

MERCOID CONTROLS
have all these qualifications. They are not only a first choice, but a must in many war production plants ★ There must be a reason. Remember – they are the only 100% mercury switch equipped automatic controls on the market

THE MERCOID CORPORATION · 4203 BELMONT AVENUE · CHICAGO · 41 · ILLINOIS

AVAILABLE NOW WITHOUT PRIORITY!

SKILBLOWERS

Safest, most convenient method for cleaning machinery!

SKILBLOWERS deliver DRY AIR at high velocity, under comparatively low pressure . . . the method acknowledged as safest for cleaning motors, generators and other delicate equipment. With suction attachments (also available) SKILBLOWERS are doubly useful as vacuum cleaners or paint and insecticide sprayers.

Like all SKILTOOLS, SKILBLOWERS are soundly engineered, compact yet fully powered, light weight and easy to handle.

AVAILABLE NOW FROM YOUR DISTRIBUTOR'S STOCK WITHOUT PRIORITY!

SKILSAW, INC.
5033-43 Elston Ave., Chicago 30, Ill., U. S. A.

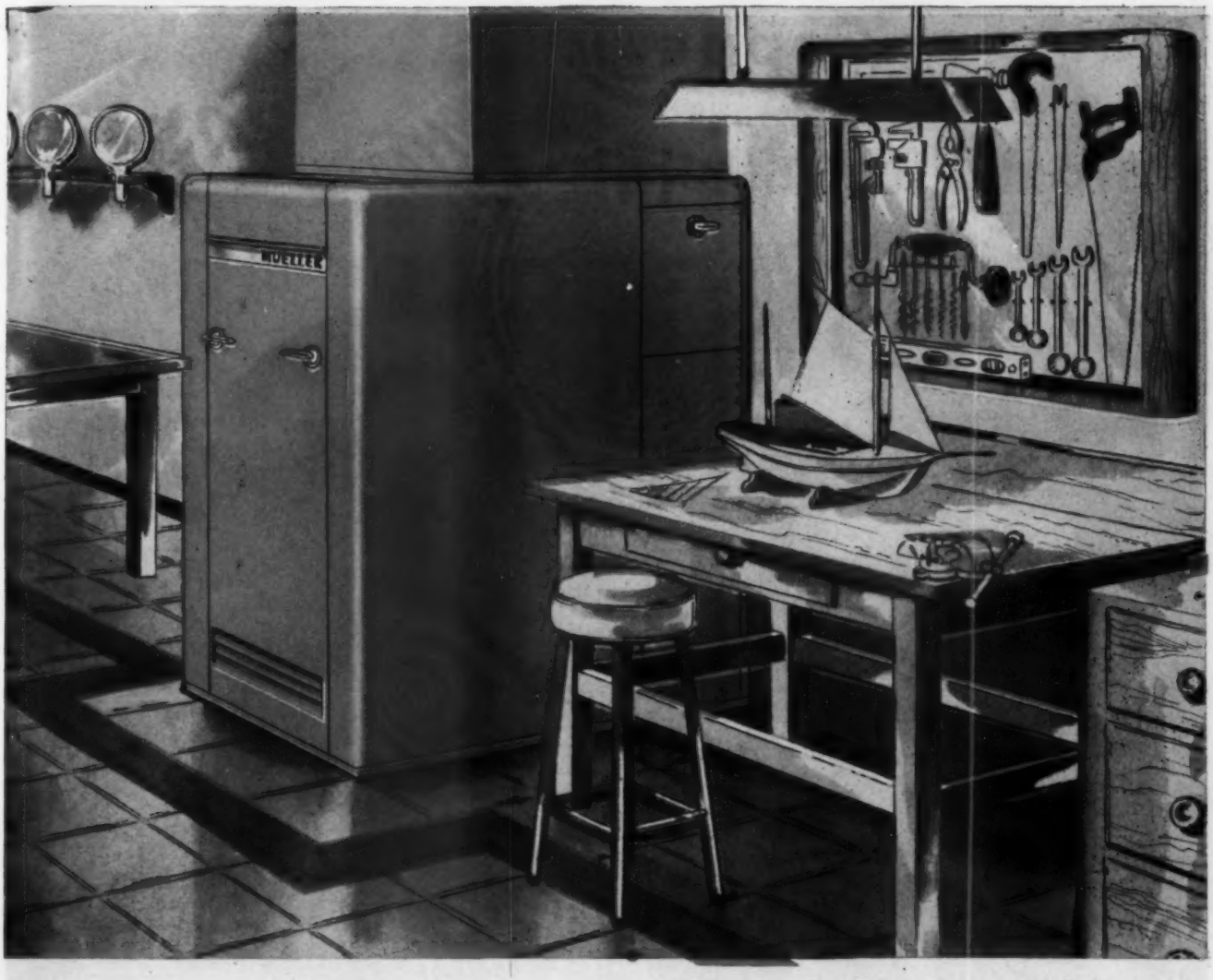
SKILBLOWERS also clean
- Switches
- Business Machines
- Ventilating and Heating Equipment
- Wrapping Machines
- Stock Bins
- Control Boards

and many others

PORTABLE ELECTRIC

SKILTOOLS

MADE BY SKILSAW, INC.



The major "home comfort factors" depend upon conditioning and handling of air

. . . and that is why you are sure of delivering True Indoor Comfort when it's a Mueller Climatrol System . . .

A home heating system is a "built-in feature." Its basic type is not easily changed. It is therefore important that your installations *start right* with a basic system that is not only modern today, but easily adaptable to the improvements of tomorrow.

To thousands of home-owners, that means a Climatrol system — product of Mueller, one of the oldest established concerns in the heating industry, and a leader in engineering advances toward the goal of true indoor comfort.

A Mueller Climatrol system provides the following essential "comfort factors":

1. Temperature control.
2. Humidity control.
3. Proper movement of air.
4. Introduction of fresh air.
5. Removal of dust, pollen, and other foreign matter.
6. Removal of bacteria conveyed on dust.

The Climatrol line is the most complete on the market. It includes furnaces and winter air conditioners, especially designed for the chosen fuel — gas, oil, or coal — also gas-fired boilers — for old or new homes of every size, type, and price range. It pays to install Climatrol on *your* jobs. Write for bulletins. *L. J. Mueller Furnace Co., 2010 W. Oklahoma Ave., Milwaukee 7, Wis.*

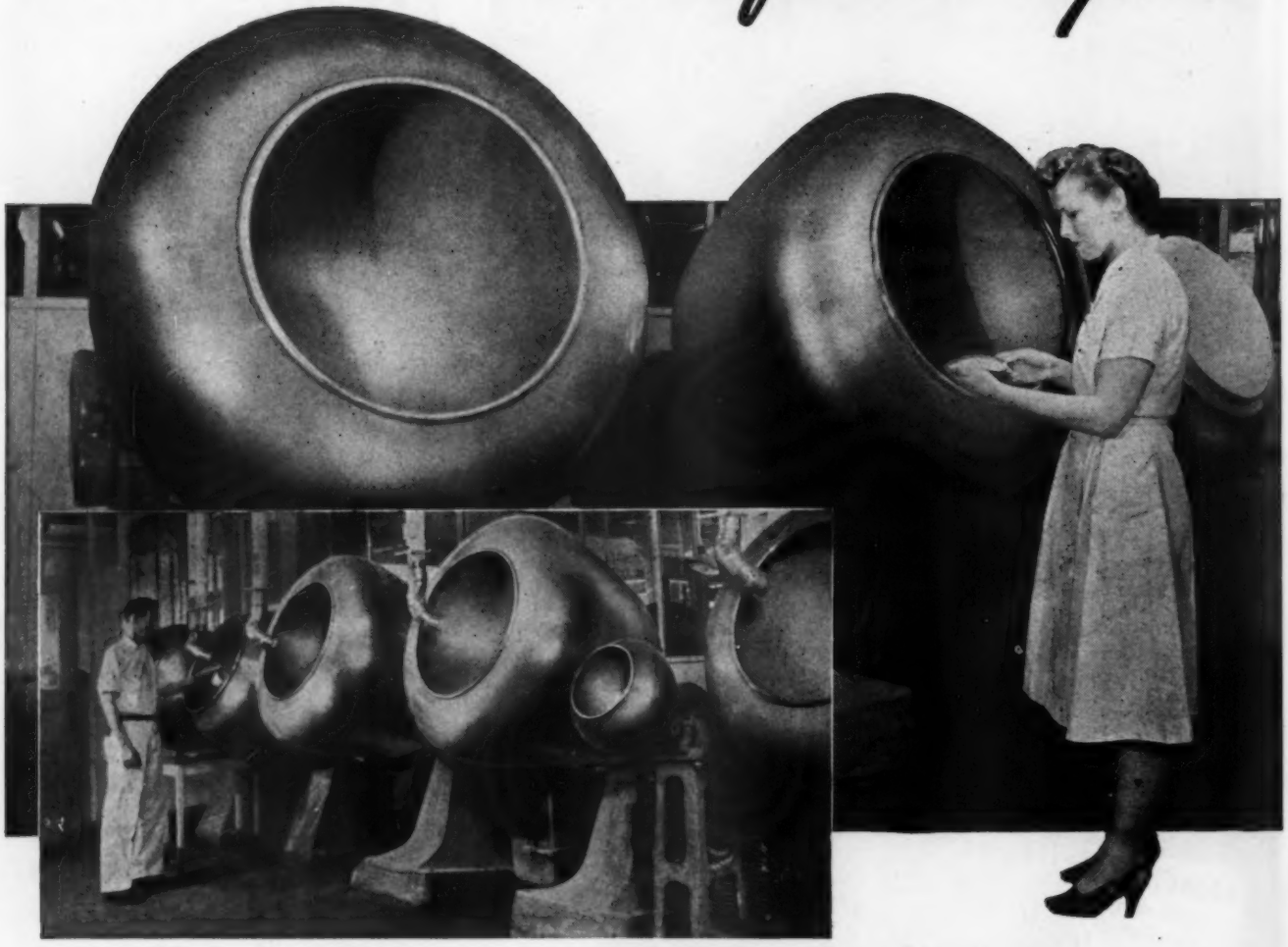
Climatrol

REG. U. S. PAT. OFF.

D-53

Made of Copper . . .

and still on the job *after 30 years*



(Lower photo) Part of battery of 20 copper tablet coating pans in Brooklyn plant of E. R. Squibb & Sons, and (above) close-up of polishing pans. This equipment was fabricated by Thomas Burkhard, Inc. of Brooklyn, N. Y., and predecessors.

IN THE BROOKLYN PLANT of E. R. Squibb & Sons . . . manufacturing chemists to the medical profession since 1858 . . . is a battery of 20 "revolving tablet coating pans" several of which have *been in service for 30 years.*

These pans, or light duty tumbling barrels, are made of sheet copper in sections, brazed and smoothly finished. All were fabricated by the present Thomas Burkhard, Inc. of Brooklyn, and predecessors. Here's the way they operate:

Up to one-half million tablets are placed in the pan and processed for 6 to 8 hours. Some 70 to 80 operations are involved, such as rounding off the edges, applying preliminary coatings, coloring with sugar syrups, coating with gelatin, and polishing with Carnauba wax.

For applications such as this, copper offers an ideal combination of advantages. It is readily fabricated, does not rust, resists corrosion, is easy to keep clean and sanitary . . . and as this Squibb installation so well demonstrates, copper provides long years of economical service.

Buy Victory Bonds . . . Help Assure World Peace

ANACONDA

Anaconda Copper

THE AMERICAN BRASS COMPANY—General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

CHECK THE FACTS

AND YOU'LL FIND...

TRADE PAPER ADVERTISING *Doesn't Sell* OIL BURNERS

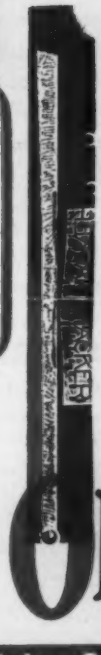
...FOR A DEALER

Right now the trade papers are loaded with oil burner advertising. Even the small manufacturers are running large space ads, many of them in color. It's an inexpensive way to look like a big advertiser.

Don't be fooled! It takes *consumer* advertising to sell the public. That's why Oil-O-Matic ads are now appearing regularly in nine important *consumer* magazines . . . and will appear in larger size and in still more magazines as soon as paper restrictions permit. That's why newspaper ads, direct mail pieces, radio spots, store and window displays, and every other kind of promotion will be used to help Oil-O-Matic dealers sell as soon as merchandise is ready.

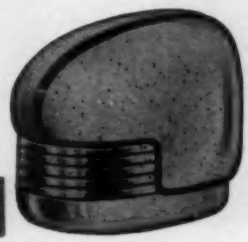
Remember, the real value of any oil burner franchise depends on what the manufacturer does to sell the *public* . . . not on what he does to sell *you*.

WILLIE O-MATIC says: Our shifting war economy has resulted in a few choice territories being opened. Yours may be one of them. Phone, telegraph or air mail—Attention: New Business Department.



New Oil-O-Matics will reflect the manufacturing know-how that has *five times* won for Williams workers the Army-Navy Award, as well as the USAAF "Approved Quality Control Rating."

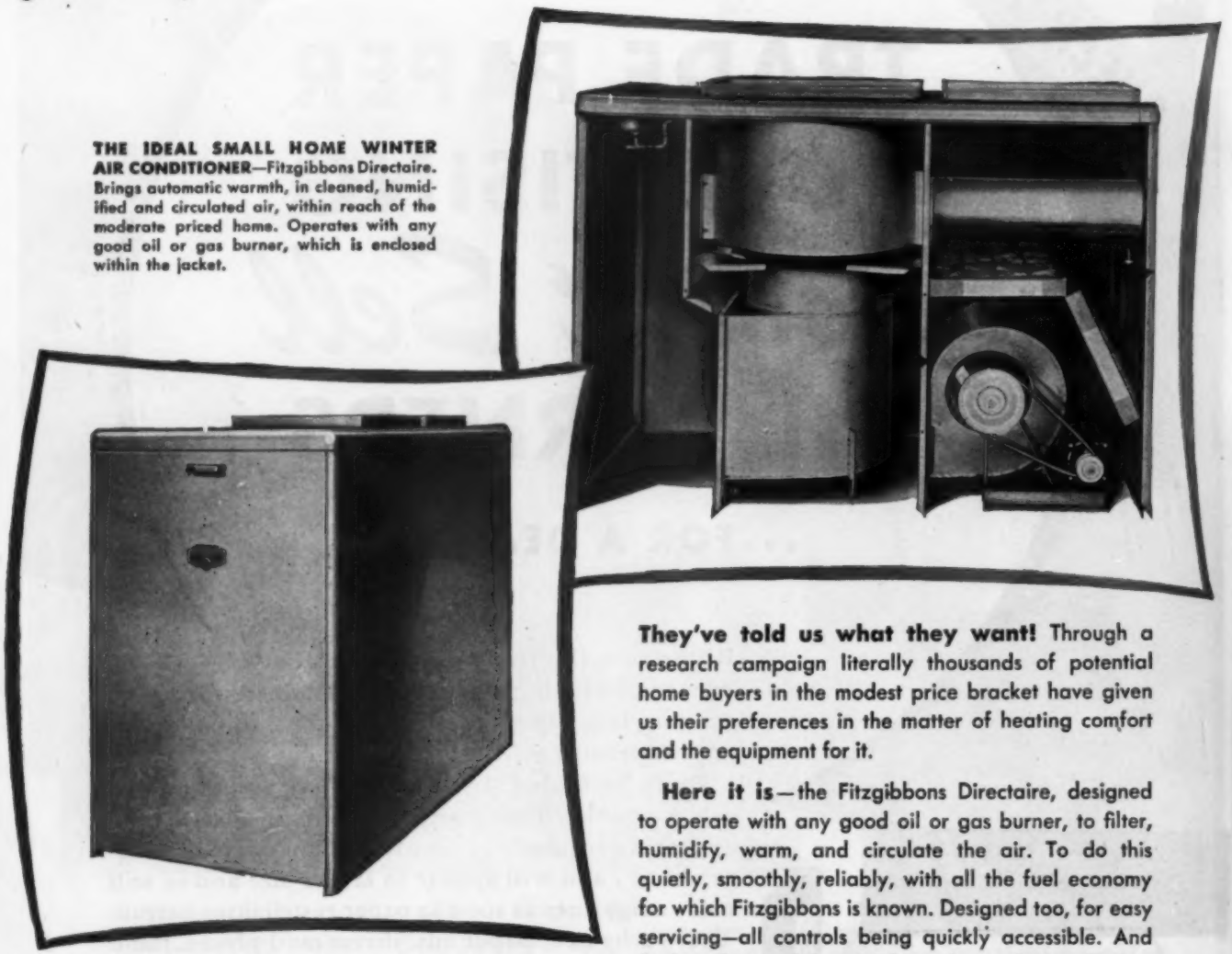
WILLIAMS OIL-O-MATIC HEATING



WILLIAMS OIL-O-MATIC DIVISION
EUREKA VACUUM CLEANER COMPANY, BLOOMINGTON, ILLINOIS

they wanted it—
HERE IT IS!

THE IDEAL SMALL HOME WINTER AIR CONDITIONER—Fitzgibbons Directaire. Brings automatic warmth, in cleaned, humidified and circulated air, within reach of the moderate priced home. Operates with any good oil or gas burner, which is enclosed within the jacket.



Available for small and medium size homes in three sizes, up to 200,000 B.t.u. per hr. heat output at bonnet. Also in larger sizes, data on request.

They've told us what they want! Through a research campaign literally thousands of potential home buyers in the modest price bracket have given us their preferences in the matter of heating comfort and the equipment for it.

Here it is—the Fitzgibbons Directaire, designed to operate with any good oil or gas burner, to filter, humidify, warm, and circulate the air. To do this quietly, smoothly, reliably, with all the fuel economy for which Fitzgibbons is known. Designed too, for easy servicing—all controls being quickly accessible. And further designed for simple and speedy installation, with its gas-tight combustion chamber of crack-proof, welded steel, and its quickly applied, beautifully finished jacket.

This is the winter air conditioner the small home owners want. They've told us so.

BUY MORE WAR BONDS AND STAMPS

Fitzgibbons Boiler Company, Inc.

101 PARK AVENUE, NEW YORK 17, N. Y.

Works: OSWEGO, N. Y. • ***Branches in Principal Cities***

Member Indoor Climate Institute — *Member Steel Boiler Institute*

ARMY E NAVY — MOST ECONOMICAL IN FUEL — 1896 — THE FITZGIBBONS BOILER

FITZGIBBONS

DIRECTAIRE CONDITIONER

You can cut
fabricating costs
with
WEIRTON
High Carbon Strip
IT GIVES YOU
1. Accurate response to heat treatment
2. Exceptional uniformity of gauge and width
3. Rigidly controlled chemical and physical properties
4. Exact constancy of grain structure
5. Controlled Decarburization Limits
6. Record of performance in war-front products that assures a home-front preference
WEIRTON STEEL CO.
WEIRTON STEEL
COMPANY
WEIRTON, W. VA. Sales Offices in Principal Cities
Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.

soundly designed for Increased Sales Simplified Service Easier Installation

...incorporating new features suggested by YOU

DESIGN HIGHLIGHTS OF THE HEIL POSTWAR LINE

1. New accessibility of all parts reduces service and maintenance time.
2. New, quieter, smoother operation on all models.
3. Standardized design and construction throughout line.
4. Units feature easier flue clean out for sustained high heating efficiency.
5. New styling and color harmony stimulate sales.
6. Complete line with models for every size dwelling and budget.

■ Yes, you had a hand in engineering the new Heil line. That's the reason it has so many of the features you have always wanted in oil-fired equipment.

Before our engineers started a single blueprint they conferred with dealers from every section of the country. They asked for and got hundreds of practical suggestions on how to make Heil postwar designs more appealing to your customers and more convenient for you to install and service.

Think what this means in sales. You won't be handicapped with prewar designs rushed into production in a new "dress" when you handle the new Heil line. It's new in every detail—and it's built the way you want, based on features you have found by experience to be what buyers want.

WRITE FOR DEALER FRANCHISE INFORMATION NOW

Convince yourself. A letter will bring you a preview of Heil designs and merchandising program. You owe it to yourself to look into a Heil franchise to see how completely it fits your own postwar sales plans.

THE HEIL CO.

DEPARTMENT A-2, MILWAUKEE, WISCONSIN

Manufacturers of Quality Automatic Heating Equipment Since 1924

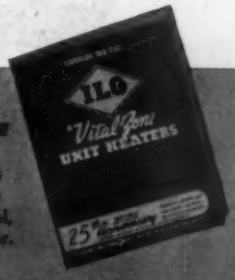
AVAILABLE WITHOUT PRIORITY !

Only ILG Unit Heaters Have Self-Cooled Motors That Never "Slow-Roast"

Now you can specify ILG Unit Heaters for *all* types of applications! These quiet, powerful, efficient, money-saving units have stood up under the grind of continuous 3-shift operation in war plants—are now ready to heat the "Vital Zone" wherever people work, shop or play. Popular sizes of horizontal, vertical or low ceiling types for steam or hot water now in production, also electric units. All backed by "ONE-NAME-PLATE" Guarantee. Write us or phone nearby Branch Office (consult classified directory) for latest specifications.

ILG

UNIT HEATERS AND VENTILATION



WRITE OR PHONE FOR CATALOG

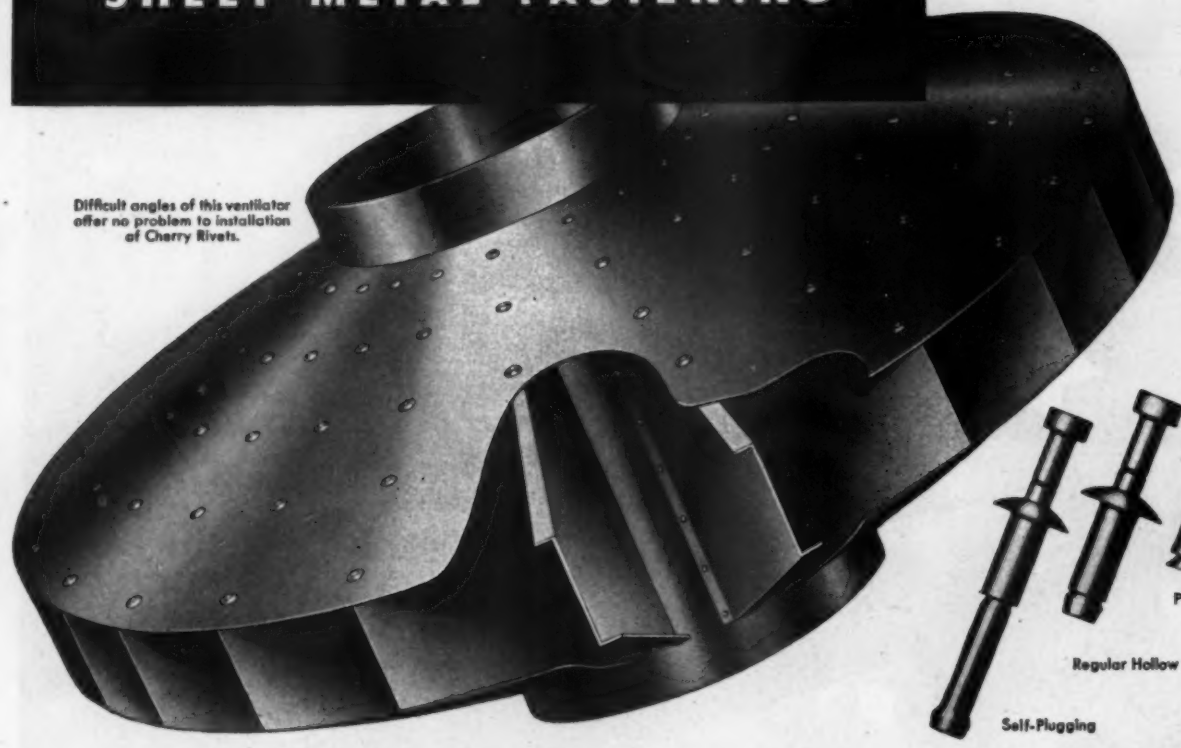
Find out how ILG Unit Heaters save eight ways on fuel, floor space, power.

WANTED: GRADUATE ENGINEERS!

for ILG Branch Offices, Research, and Engineering Departments. Exceptional opportunities now and post-war for graduates of accredited technical schools. Send details on education, experience, health, age, and marital status.

ILG ELECTRIC VENTILATING CO., 2871 N. Crawford Ave., Chicago 41, Ill.
Offices in 40 Principal Cities

THESE MODERN RIVETS IMPROVE MODERN SHEET METAL FASTENING



Difficult angles of this ventilator offer no problem to installation of Cherry Rivets.

Pull-through Hollow

Regular Hollow

Self-Plugging

CHERRY BLIND RIVETS are designed to meet the installation requirements of modern sheet metal fastening, as well as to simplify and speed up blind and hard-to-get-at rivet applications.

They are upset in a modern way—with a pull exerted by small, easy-to-handle Cherry Rivet pneumatic or hand guns. Installation can be made by one operator from one side of any location, blind or not, without bucking.

Cherry Rivets conform to modern contours; hold securely on curved surfaces, in tubes, bends and ducts; fasten double surface structures from one side.

Modern materials such as plastics, rubber, leather, fabrics, plywood, as well as all sheet metals can be fastened quickly, easily, and with complete success.

Cherry Rivets meet the stress and strain requirements of modern uses. They aid in simplifying and speeding up modern production and repair methods. Because of their wide range of applications, they allow greater flexibility in modern designing.

The installed appearance of Cherry Rivets is up-to-date, modern—enhances the appearance-value of the finished product. And their installed cost is low.

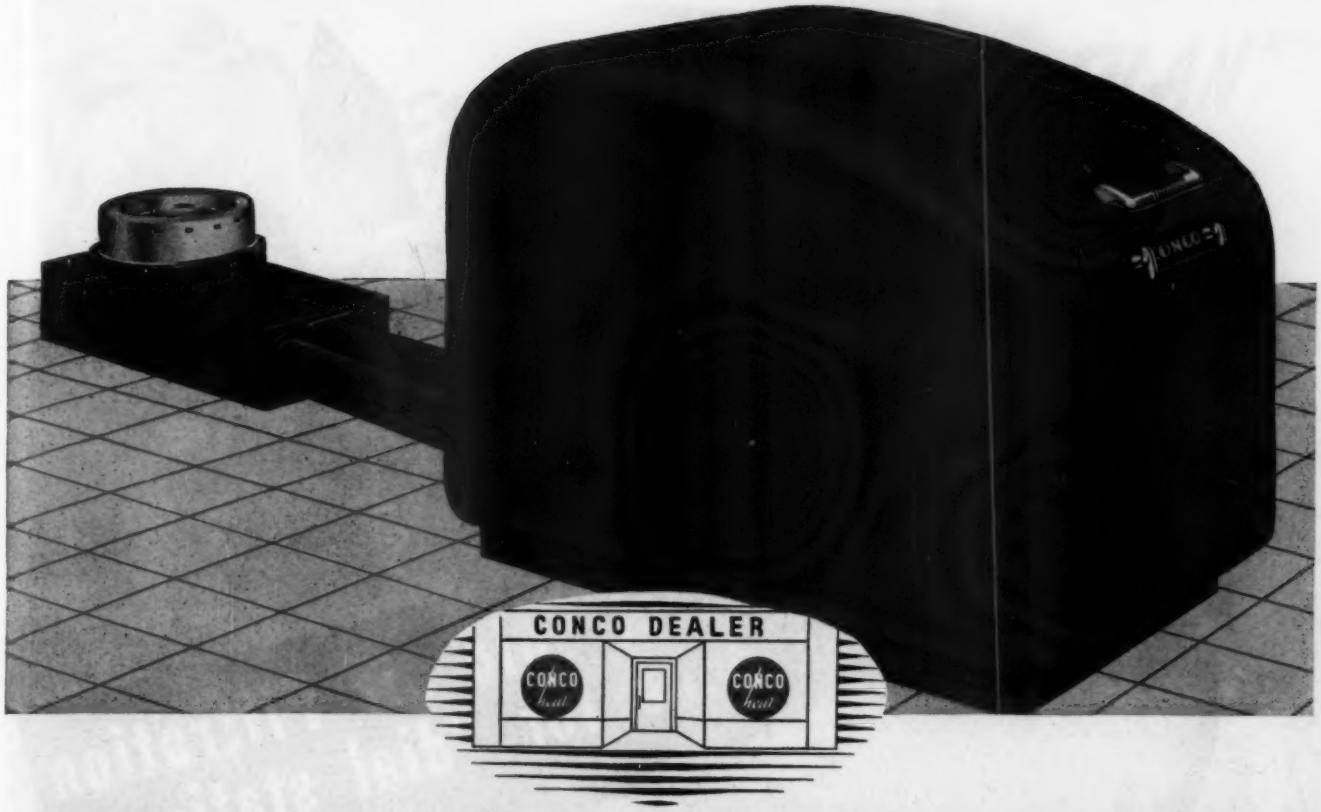
For more information, contact your nearest jobber or write now for illustrated Manual D-45, Dept. A-200, Cherry Rivet Company, 231 Winston Street, Los Angeles 13, California.

Self-plugging Cherry Rivets installed in sheet metal. Joints sit firm, strong, tight.

G-15RB gun shown below can be operated with one hand in any position.

CHERRY RIVETS, THEIR MANUFACTURE & APPLICATION ARE COVERED BY U. S. PATENTS ISSUED & PENDING

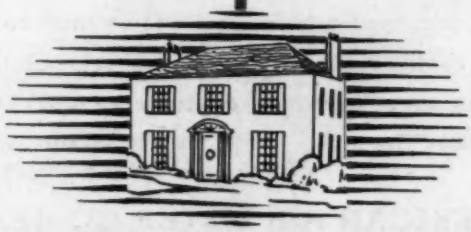
Cherry Rivet
Company
LOS ANGELES 13, CALIFORNIA



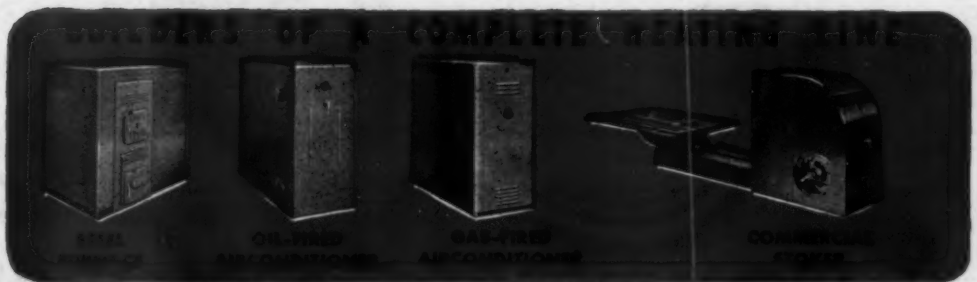
"SHORTEST DISTANCE" BETWEEN THESE "TWO POINTS"

THE *Conco Heat* LINE

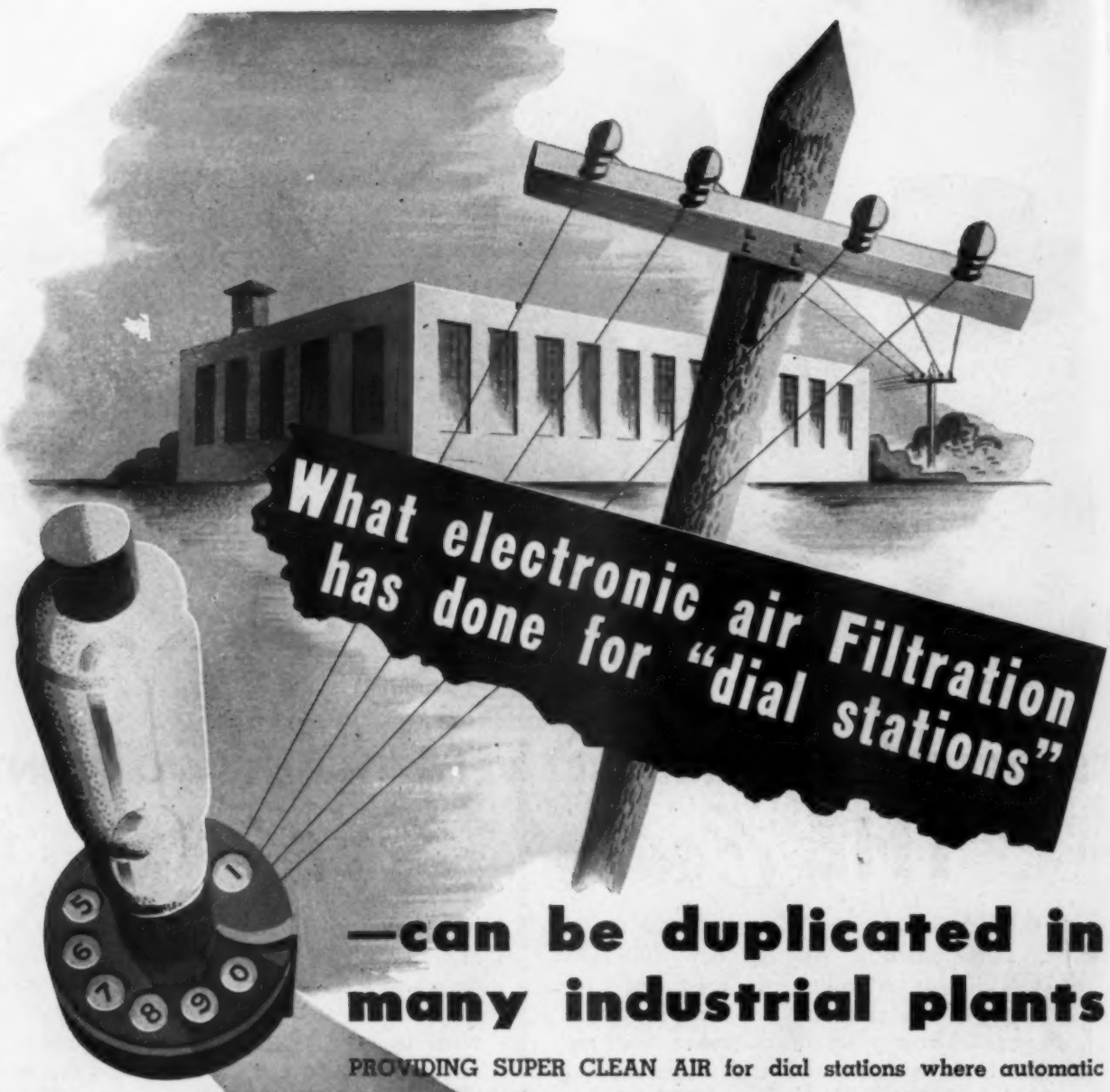
WISE distributors have recognized the amazing sales potential of this new CONCO STOKER. It's the line of "least sale s resistance," from retail dealers and from consumers. Three years of unbroken wartime research have made this the "most talked about" stoker in the field — STYLED for eye-appeal and buy-appeal, ENGINEERED to perform. Yes, the new CONCO STOKER is designed to "perform" on the dealer's floor as well as in the consumer's basement. There are a few territories open. And our franchise is available to aggressive distributors who want to sell the BEST line, and SELL IT HARD. If you are interested and can qualify, write for full details on the CONCO-HEAT franchise. We're looking for a distributor like you!



CONCO heat



CONCO ENGINEERING WORKS ● MENDOTA, ILLINOIS



—can be duplicated in many industrial plants

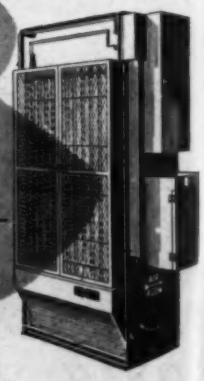
PROVIDING SUPER CLEAN AIR for dial stations where automatic telephone switch board equipment operates, is a job made to order for AAF Electronic Air Filters—and they are performing this exacting service, with complete satisfaction, in cities throughout the country. The same clean air requirements are present in many industries today where materials in process must be protected against spoilage by dust, soot or smoke and where worker efficiency is impaired by air contamination. AAF has developed the first complete line of Electronic Air Filters, making super clean air available for every industrial and commercial need. Write for copy of booklet "The Magic of Electronics in Air Filtration" just off the press.

AMERICAN AIR FILTER COMPANY, INC.
Incorporated
355 Central Avenue, Louisville 8, Ky.
In Canada, Darling Bros., Ltd., Montreal, P. Q.

AAF

Electro-matic

THE ELECTRONIC AIR FILTER



"HERE'S MY POST-WAR PLAN"

WEIR-MEYER *Modern Heat*

AUTHORIZED DEALER

"Complete! That's WEIR-MEYER post-war equipment. It's as modern as the new homes Americans are planning. There's a WEIR-MEYER for **every** planned **new** home, whether 4 rooms or 14!"

"Because thousands of 'remodelers' will demand the ultimate in modern heating, WEIR-MEYER is styled for tomorrow . . . achieving the desire of modern home owners for greatest heating efficiency, comfort, convenience!"

WEIR-MEYER post-war equipment is **sales inspiring.** Look at the unequalled performance record of many WEIR-MEYER furnaces which have been in continuous operation for 50 years . . . and are still going strong! Look at the National Advertising! It's already pre-selling WEIR-MEYER **for** you. Sales advantages like these build profitable, volume business. Investigate a WEIR-MEYER dealership NOW. Some territories are "open".

THE MEYER FURNACE CO.

Weir and Meyer Furnaces . . . Air Conditioners for

COAL . . . GAS . . . OIL

PEORIA 2, ILLINOIS

MEYER Oil-fired AIR CONDITIONER gives the user of oil a new conception of cleanliness, efficiency and economy of operation.

MEYER Gas-fired AIR CONDITIONER built for efficiency and durability. Easy to install, finer performance, greater convenience.

The NEW WEIR U Series STEEL FURNACE. Famous WEIR reputation plus exclusive and entirely new features.

80 years of experience, engineering, designing and production skill are reflected in the quality and quantity of WEIR-MEYER post-war heating equipment. Leadership is a habit with WEIR-MEYER. Post-war equipment offers the finest ever!

WEIR-MEYER MEANS *Modern Heat*

"the finest piece
equipment on

Burns low-priced slack coal

Pocahontas equipment successfully burns fine size coal which is most abundant, as well as the regular stoker size—a feature of highest importance to every coal dealer.

Eliminates back-breaking coal shoveling

Coal is piped from bin to furnace, all without alteration to present coal bin. Stops forever, daily trips to basement to fill hopper—no coal to shovel.

"Lifetime" chrome nickel retort gives longer life where needed

There's no question that the "hottest spot" in a stoker is in the retort, that's why we use chrome nickel alloy tuyeres. It means ultra protection and demonstrates our policy of keeping high quality foremost.

Ashes are eliminated automatically—no clinkers to dig

No longer is it necessary to dig for hot smelling clinkers—simply replace full ash container with empty one—that's all the furnace tending you need to do—no wonder owners are so enthusiastic.

Pocahontas Controls provide a new standard in even stoker heat

The patented Stoker Pilot used on all Pocahontas Automatic Stokers operates the stoker according to heat required, rather than on time cycles. It has long been one of the many amazing features of this unusual stoker.

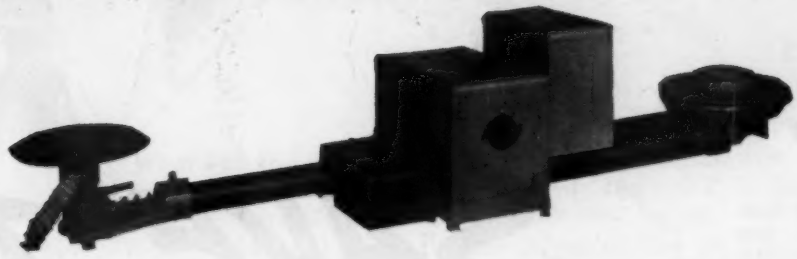
There's a Pocahontas Stoker for every type furnace

All Pocahontas Stokers are so designed that they can be easily installed in every type—steam, hot water, or warm air furnace, and with the universal knuckle you can install the stoker from any angle.

POCAHONTAS THE FIRST SUCCESSFUL BITUMINOUS BIN-FEED ASH REMOVAL STOKER

e of heating the market!"

—that's what dealers tell us



• Perhaps we have been a little modest, but for over ten years dealers and customers have been telling us that the Pocahontas Automatic Bin-Feed Ash Removal Bituminous Stoker is the finest piece of heating equipment on the market.

We believe you'll agree that a stoker that eliminates coal shoveling and clinker digging, is certainly the stoker the public wants —and logically if you are interested in building a business with an eye to the future, it will be to your advantage to get all the facts and thoroughly investigate the Pocahontas line.

Postwar conversion is making fast strides, production is increasing. May we suggest therefore, that you write us today.

STOKER DIVISION

POCAHONTAS FUEL COMPANY INCORPORATED

338 EAST 131st STREET • CLEVELAND 8, OHIO

Check

these ADVANTAGES of the Timken Profit Franchise

1. **Complete line of oil heating equipment for new homes or for modernization.**
2. **Quality products which can be sold successfully at a profit.**
3. **Outstanding sales features, including the famous Timken Wall-Flame principle which requires only *one* moving part.**
4. **Savings up to 25% in fuel and electricity costs, proved by reports from thousands of users.**
5. **Consistent national magazine and factory-paid key city newspaper advertising.**
6. **Well organized direct mail programs for dealer's prospect lists.**
7. **Factory co-operation for dealer's local advertising program.**
8. **Hard-hitting dealer sales helps and sales promotion material.**
9. **Factory conducted sales and service schools.**
10. **Unmatched public acceptance of all products.**

Year after year, the Timken franchise has consistently made more money for dealers —has been the most sought-after franchise wherever oil heating is sold. It is in every sense the *PROFIT* FRANCHISE.

SAVE TIME

Investigate the TIMKEN PROFIT PROGRAM

"Which oil burner will produce the largest volume of profit for me over a period of years?"

Get the answer to that question and you'll know which burner you want to sell.

Timken dealers already know the answer, for every dealer who ever worked with Timken has made more money with Timken than he ever made with any other burner.

Does that sound too good to be true? Let us show you the facts. The Timken Silent Automatic Franchise pays off for two good reasons . . . unique burner design that gets more heat from less fuel with minimum mechanical attention . . . and a selling program that includes everything progressive dealers need.

The high spots of the Timken set-up are given in the column at the left. Isn't this the kind of franchise you want to have during the busy years just ahead? The demand for oil burners is already greater than it ever was before. You can make the most of this opportunity, if you sign up with Timken now.

A request on your business letterhead will start the ball rolling.

TIMKEN *Silent Automatic*

Quality Home Appliances for Comfort, Convenience and Economy
20 Years of Faithful Service to American Homes
Division of THE TIMKEN-DETROIT AXLE CO., Detroit 32, Michigan

new . . . handy manual on MILCOR simplified heating line

What you can expect to get from the simplified, but *still complete,* line of Milcor furnace pipe, gravity and forced air fittings, stove pipe and elbows is shown in this new catalog.

It provides you with a detailed picture of how the Simplified Practice Program R-207-45, sponsored by the U. S. Department of Commerce, National Bureau of Standards, and adopted by Milcor and others, works to our mutual benefit, by weeding out those particular sizes, weights, and styles whose existence never was justified by any substantial consumer demand.

With the number of special fittings reduced to those most widely used, we at Milcor can concentrate on producing *better values* for you and providing *better deliveries.*

You, the sheet metal man, can carry a smaller inventory, reduce your overhead, and enjoy greater assurance of producing results on the job that are good-looking, safe, satisfactory.

A free copy of the new Milcor Heating Catalog is available to qualified sheet metal men upon request. Write for yours.

The publication of this catalog does not indicate an improvement in our ability to supply you with Milcor heating materials at present. Our war work and shortages of materials and manpower still permit the manufacture of only a few Milcor products — and in extremely limited quantities. However, we are glad to extend all cooperation possible, dependent upon current conditions.

MILCOR STEEL COMPANY
MILWAUKEE 4, WISCONSIN
Baltimore 24, Maryland • Chicago 9, Illinois • Kansas City 8, Missouri
Los Angeles 44, California • Rochester 9, New York

THE J.M.&L.A. G-95

. . . equipped to provide additional service through OSBORN CO. *. . . a Division of Milcor Steel Company*

CLEVELAND 14 • DETROIT 2 • BUFFALO 11 • CINCINNATI 28

IF YOU HAVE "THE MAKINGS" FOR *Sales Leadership...*

Here's why you'll build volume faster and make more profit with Fluid Heat

HERE'S the complete cooperation you need . . . and the complete line you need . . . to carry you quickly to the top in the oil heating business in your territory. Just look at what you'll have as a Fluid Heat Dealer:

1 You'll have the assistance of an active Field Force . . . of experienced Fluid Heat men who can help you on any problem of oil heating installation, operation, service or sales.

2 You'll have behind you a company which has built its oil heating business by helping dealers build theirs. Fluid Heat believes in working with dealers as partners in a cooperative, progress-minded effort.

3 You'll have real consumer acceptance . . . a trade-mark with a reputation that dates from the beginning of the oil heating industry . . . backed by a nationally known manufacturer whose products have given satisfaction to home owners for more than half a century.

4 You'll sell equipment that is soundly designed and ruggedly built . . . to reduce service problems to a minimum and build sales through customer satisfaction. Many Fluid Heat Burners are still on the job after 17 to 20 years of use.

5 To keep you out in front product-wise, you'll have working for you one of the largest development laboratories in the industry . . . from which have come many sales-building Fluid Heat features. More will come from Fluid Heat's successful development of efficient combustion and heat transfer equipment for the Armed Forces.

WRITE TODAY! Fluid Heat is ready to work with you . . . so you'll be all set to profit by the huge postwar market for oil heat. Check the completeness of the Fluid Heat line below. Then get complete facts about a Fluid Heat Franchise. No cost. No obligation. Write today to: Fluid Heat Division, Anchor Post Fence Co., 6720 Eastern Ave., Baltimore 24, Maryland.

fluid heat
PRODUCTS

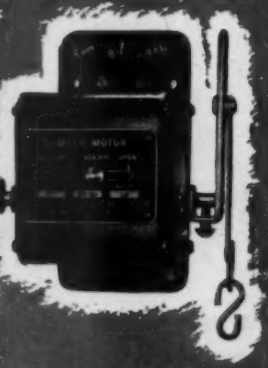
"WORLD'S ECONOMY CHAMPION"

A Product of the Anchor Post Fence Company, Baltimore, Md., Established 1892

4 Pressure Burners
Firing rates from 7/10 to 12 gallons per hour
6 Vertical Rotary Burners
Firing rates from 7/10 to 6 gallons per hour
Air Conditioning Furnaces
From 70,000 to 200,000 BTU per hour
7 Boiler Burner Units
Capacities from 475 to 840 sq. ft. of standing hot water
40 Gal. Hot Water Heater
Sells on appearance —delights users by performance

Regulators For Hand-Fired Heating Plants

THERMOSTAT



DAMPER MOTOR

TRANSFORMER

THESE INEXPENSIVE, EASILY INSTALLED UNITS

PLUS

MASTER All Weather CONTROL

. . reduces heat loss up stack . . . prevents overheating in cold weather and holds fire in mild weather . . . *Saves Fuel* . . . brings added comfort, health and convenience.

BRING ADDED SATISFACTION

Write today for facts about MASTER "All Weather" CONTROL

PIONEER CONTROLS

The **MASTER ELECTRIC** Co.
Aircraft and Electrical Controls Division
DAYTON 1, OHIO

MASTER

NO!

"No" is a *negative* word . . . but we used it in a *positive manner* . . . when specifying design for the. MOR-SUN *heat exchanger.* Investigation revealed the bad points of furnace design . . . so our engineers received the following instructions . . .

No baffles
No radiators
No reverse flue travels
No dirt or condensation traps
No flame impingement
No gaskets or joints in the air stream
No lightweight metal

A tough assignment . . . but thirty-odd years in the heavy metal stamping field have given us the *"Know-How"* to whip tough problems.

Die stamping and automatic welding . . . coupled with modern design . . . make the MOR-SUN a rugged, efficient heat exchanger! The same trend of modern thinking created the handsome and unusual MOR-SUN casing . . .

Descriptive literature is being prepared . . . and will be in your hands soon. Changing conditions should allow us to announce a production date in the near future . . . *MOR-SUN is worth waiting for!*

MOR-SUN
PRESSED STEEL FURNACES

MORRISON STEEL PRODUCTS, Inc
BUFFALO 7, N. Y.

"The Sun Never Sets with MOR-SUN!"

USE THESE FREE HELPS TO *Help* FUEL CUSTOMERS *Save Fuel* THIS WINTER!

The annual Fall DUST-STOP* Filter-Replacement Program is again in full swing, reminding owners of forced-warm-air furnaces that it's time to replace dirt-clogged filters—that new, clean DUST-STOPS save fuel.

If you haven't yet tied in with the campaign—with the powerful DUST-STOP national advertising reaching nearly ten million families—check the FREE Sales Helps now available and get in touch with your DUST-STOP Supplier without delay.

FOLDERS—Use this colorful, *descriptive folder* as a handout piece or envelope enclosure. Space is provided for your name, address and phone number.

DIRECT MAIL—Two timely, effective *mailing cards*, one for mailing right now, the other a little later in the heating season. Both have handy return order cards attached.

WINDOW TRIMS—Bright window streamers take but little space, are doing a great job of reminding customers that it's time to install new DUST-STOPS.

DISPLAYS—Handsome, colorful and compact, this Standard Store Display accommodates a full-size DUST-STOP filter. Size, 24" x 30". Motion or trick lighting can be easily added.

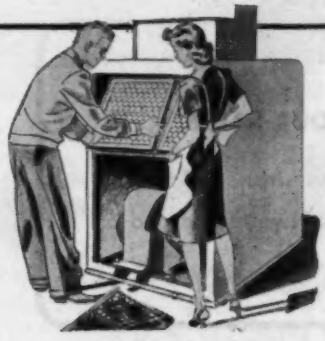
Attractive counter card, 18" x 11", is a good reminder for customers in the store.

Deluxe Store and Window Display accommodates a 20" x 20" filter or two 10" x 10 "filters. Motion and lighting can be easily added. Size when set up is 42"x47" by 9" deep.

Use these and other Free DUST-STOP Sales Helps now. Ask your Supplier for details.

Owens-Corning Fiberglas Corporation, 1930 Nicholas Building, Toledo 1, Ohio

In Canada, Fiberglas Canada Ltd., Oshawa, Ontario.

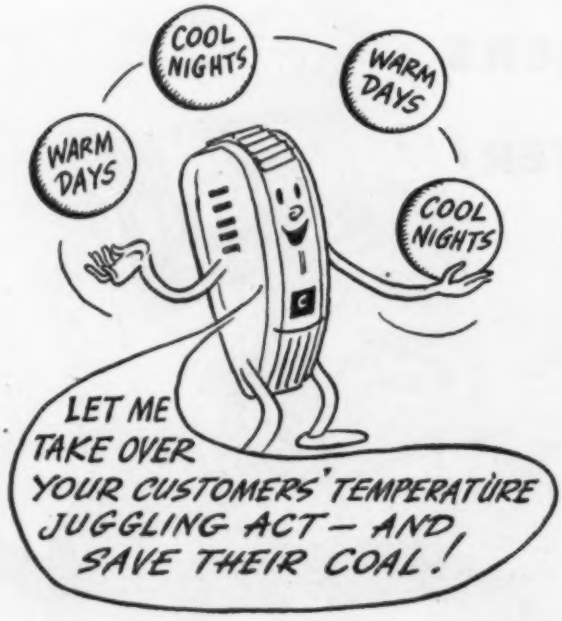


DUSTOP* AIR FILTERS

a FIBERGLAS product

*T. M. REG. U. S. PAT. OFF.

Every owner of a forced-warm-air furnace needs two or more Dust-Stop Air Filters . . . at least once a year.


COOL NIGHTS
WARM DAYS
WARM DAYS
COOL NIGHTS
LET ME TAKE OVER YOUR CUSTOMERS' TEMPERATURE JUGGLING ACT — AND SAVE THEIR COAL!

NOW'S THE TIME

to put a Crise Quality Control on every customer's hand-fired furnace, whether it's steam, hot water or warm air. Conserve his coal supply during this season of changeable temperatures — he'll need the extra coal later!

EASY TO INSTALL

Engineered so they are simple, fast and easy to install—you can service more customers in less time.

THERE'S BIG PROFIT IN CRISE

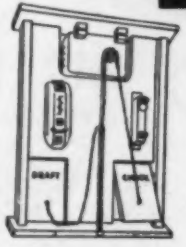
Crise Controls are priced to give you a generous margin of profit, yet they are not a luxury item. All your customers can afford a Crise Control.

See Your Crise Jobber At Once

W. B. Crise

Executive Vice President

The CRISE MANUFACTURING CO.
COLUMBUS 16, OHIO



CRISE DEALERS — BUILD YOUR SALES!

Ask your jobber about the Demonstration Panel he can get for you . . . It will help you sell in your shop and at the customer's home.

Stoker-firing has long since proved its case as the low-cost way to burn fuel for either space heating or power. The question, therefore, among men responsible for economical heating plant operation is not *why* a stoker but *what* stoker! Obviously the savings made by a stoker hinge directly upon the *quality* of the equipment purchased.

The creative engineering and high construction standards found in Winkler Stokers are a warranty of maximum fuel and labor savings plus protection of the investment itself. The Winkler Fully Automatic Transmission, for example, is a unit in which *Internal Planetary Gearing* eliminates the mechanical deficiencies of conventional gear designs. It develops *extra power* to overcome ordinary operating overloads. It is one of the reasons a Winkler Stoker can be depended upon for service-free operation and longer life.

A GOOD PRODUCT—A SOUND ORGANIZATION

Winkler's mechanical excellence develops to the fullest the multiple benefits of stoker firing. The proved quality of this complete line of stokers is supported by thorough training of distributors in the selling methods which make Winkler Stoker merchandising a highly profitable enterprise. For these reasons and because of the sincere regard of the factory for the problems of the distributor, the U. S. Machine Corporation is known as a "good company to do business with."

NO SHEAR PIN!

When the screw load exceeds a predetermined torque the Winkler Automatic Safety Release disconnects the transmission from the drive shaft, then momentarily re-engages it. If the obstruction is rock or slate, two or three re-engagements will, in most cases, crush it. If the feed screw is permanently locked, the mechanism is fully protected even though it runs for hours. Upon removal of the obstruction, the Winkler resumes normal operation.

NO SERVICE IN TWO YEARS

A real estate man writes—"After careful investigation into stokers for our two apartment buildings, we bought Winkler Stokers. Their performance has been very economical, *without service attention in the two years of operation.* I would highly recommend Winkler Stokers to any apartment owners who want the best in heating service."

WINKLER

fully automatic STOKERS

U. S. MACHINE CORPORATION • Dept. G-6 • LEBANON, IND.

"W H E N C A N W E

H A V E A L L T H E

H A N D Y P I P E

W E N E E D ?"

That is today's "$64 Question"....and the best possible answer to it is----

"I T W O N ' T B E L O N G N O W"

You know as well as we do that we're eager to fill all orders for Handy Pipe and Fittings as promptly as we did in "the good old days"----

And you know as well as we do that the two factors that must work to that end are (1) the ability of the mills to supply us with the sheets we must have (while they also take care of some hundreds of thousands of other customers' sheet metal needs!) and (2) the procuring of additional men, to operate our fabricating machines.

The suddenness with which Japan surrendered, beyond any doubt, caught the United States unprepared for such an abrupt ending of war problems and it has dumped in our laps nation-wide requirements for peacetime production and distribution of billions of dollars-worth of everything from furnace-pipe to complete homes that are wanted "RIGHT NOW"!

We, here at the Home of Handy Pipe are (and have been) "alerted" to quick resumption of Handy production at top speed at the earliest possible date....

AND YOU HAVE OUR ASSURANCE
THAT THE NEW HANDY PIPE IS
ALL THAT YOU REMEMBER IT TO
BE--AND WANT IT TO BE.

F. M E Y E R & B R O . C O .

"The Handy Pipe People" since 1866

P E O R I A , I L L I N O I S .

If it's to be painted give customers *TRIPLE PROTECTION*

Consider these Armco Special-Purpose sheets for your various kinds of jobs:

Galvanized ARMCO Ingot Iron.

ARMCO Galvanized PAINTGRIP Steel
(also available with ARMCO Ingot Iron or Copper-Steel base)

ARMCO Stainless Steel

The "Scratch Test" shows how paint sticks to ARMCO Galvanized PAINTGRIP Steel. The top half of the sample is Bonderized at the mill. When scratched with a penknife only a slight mark can be seen. Paint on ordinary galvanized steel (bottom half) peels off readily.

This "peel-off" picture clearly shows the advantages of ARMCO Galvanized PAINTGRIP Steel for *all sheet metal work to be painted.*

No. 1 is the smooth, tight paint finish that can be applied as soon as the work is done, and which lasts several times longer than paint on ordinary galvanized or uncoated sheets.

No. 2 is the special mill-Bonderizing treatment that takes and preserves the paint without pre-treatment. No fuss, no bother, no added cost.

No. 3 is the full-weight galvanized coating that protects the high-quality iron or steel base from rusting.

Remember, it costs no more to use ARMCO Galvanized PAINTGRIP than to use ordinary galvanized and acid-etch it before painting. You get a quicker, longer-lasting job. Exposed air-ducts, roof-drainage systems, furnace casings—these are just a few building uses.

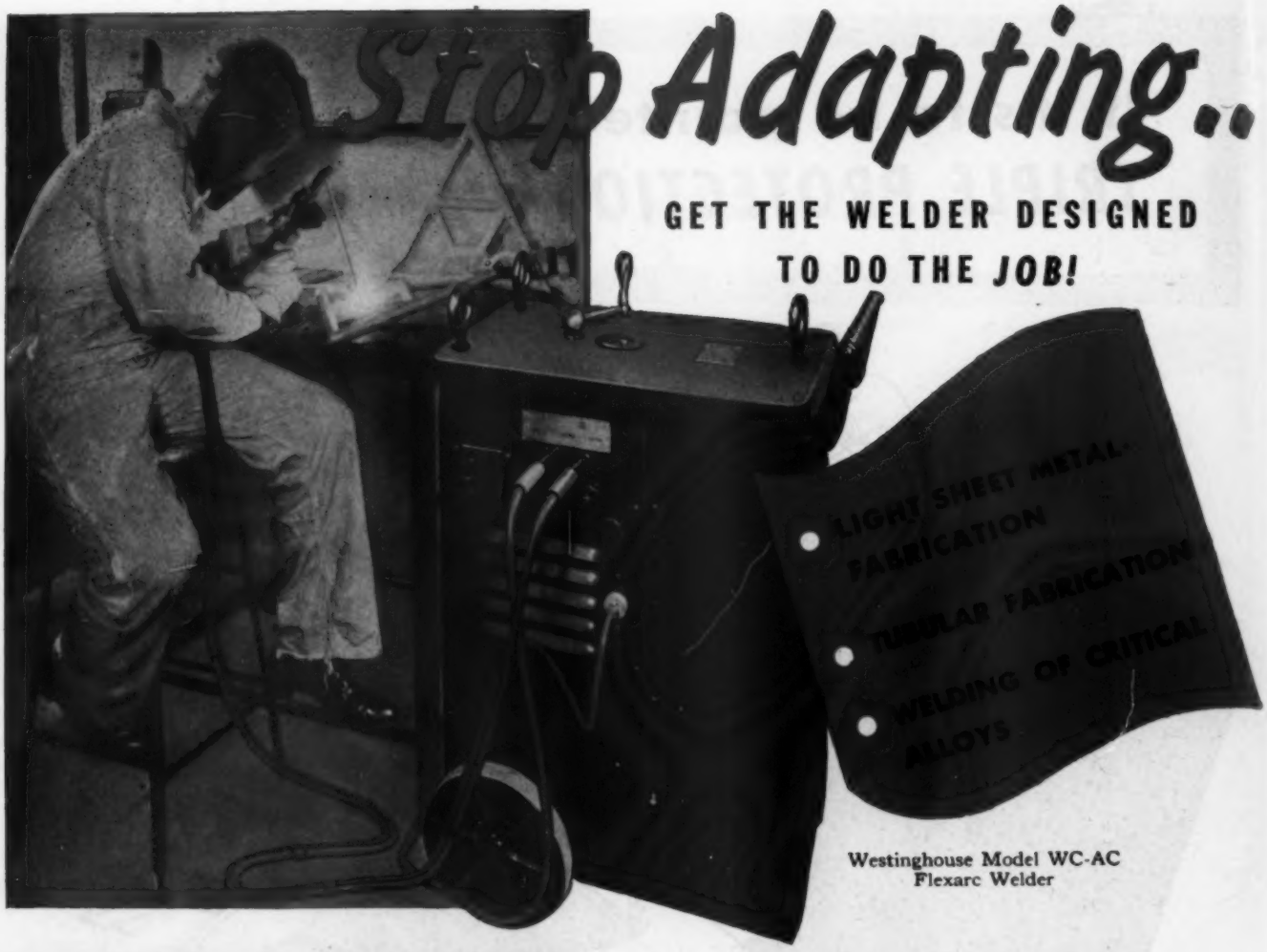
Write for the ARMCO PAINTGRIP booklet, which gives complete information on fabricating, finishing and applications of this steel. The American Rolling Mill Co., 1781 Curtis St., Middletown, Ohio.

The American Rolling Mill Company

Special-Purpose Sheet Steels
For Tomorrow's Buildings

Stop Adapting..

GET THE WELDER DESIGNED TO DO THE *JOB!*



Westinghouse Model WC-AC
Flexarc Welder

NEED AN ALL-PURPOSE WELDER?

Westinghouse Model WT-4C A-C Welder is an excellent and sturdy machine for all around service and light-duty production welding. Generously designed and easily portable, this welder with high power factor can cut costs and speed up service on all kinds of welding jobs. Twenty-seven steps of current adjustment from 20-250 amperes.

This new Westinghouse high-frequency stabilized a-c welder meets the need for a welder that can weld light sheet metal. It was designed and intended first for the aircraft industry so that thin-wall tubular fuselage members, tubular clusters on engine mounts and landing gear could be welded satisfactorily and economically. With it, there is no need to "adapt" welders designed for other types of service.

CHECK THESE FOUR POINTS:

1. Operator can strike and maintain arc easily over entire range of welding on light work. High-frequency stabilized arc keeps current constant, prevents burn-through.
2. Easy stepless current adjustment from 10-200 amperes.
3. Welds all types of alloys as readily as carbon steel.
4. High efficiency and power factor.

Call your Westinghouse Welding Distributor, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-70444

Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

A-C WELDERS

Everybody knows KALAMAZOO...

the line of least resistance!

The shortest distance to dealer profits is the straight Kalamazoo line . . . paced by Gas and Electric Range models that are genuinely new.

For 45 years, Kalamazoo has sold direct to consumers and through factory-owned stores. Now, *for the first time,* franchise dealers are offered a share in Kalamazoo Prosperity . . . and a chance to take advantage of Kalamazoo's tremendous reservoir of consumer acceptance.

Through mass production and mass distribution, Kalamazoo gives you a quality line to offer at unparalleled values—with great profit and volume possibilities for you. We are pouring $2,500,000 into re-tooling and into streamlining our production line . . . so that you can introduce products that are *new*—not "made-over" '42 models.

For complete information, write today to Sales Manager, *Kalamazoo Stove and Furnace Company,* 453 Rochester Avenue, Kalamazoo 6, Michigan.

KALAMAZOO
STOVES AND FURNACES
Quality Leaders Since 1901

CHRYSLER AIRTEMP

A Market for Every Dealer— A Dealer for Every Market

The Chrysler Airtemp line of heating, cooling and refrigeration, automatically commands a major market in any community. The style and engineering principles incorporated in each individual product reflects superiority and will be offered to the consumer at prices that reflect mass production economies. With strong national advertising, tailored merchandising and selling practices to assist the dealer, volume sales will be a normal result. The dealers handling Chrysler Airtemp will be given territories for intensive sales cultivation that are fair and extremely productive. Chrysler Airtemp has a wide range of cooling and refrigeration products, including the famous "Packaged" Air Conditioner pioneered and designed to meet practically every need in temperature-humidity control equipment.

The Chrysler Airtemp Triple Line . . . Heating, Cooling, and Commercial Refrigeration . . . offers dealers an unusual opportunity for 12 months' profitable operation. Dealer agreements will be available for any single Chrysler Airtemp Line . . . any two lines . . . or for all three lines. • Airtemp Division, Chrysler Corporation, Dayton 1, Ohio. In Canada, Therm-O-Rite Products, Limited • Toronto, Ontario.

THE TRIPLE LINE

THE 4 FUNDAMENTALS of CHRYSLER AIRTEMP DEALER OPERATIONS

1. Engineered Installation
2. Proper Display
3. Outside Selling
4. Customer Service

Buy Victory Bonds—"Listen to the music of Andre Kostelanetz, Thursdays, CBS, 9:00 p. m., E.W.T."

HEATING • COOLING • REFRIGERATION

THE STOKER WITH THE COMFORT AND ECONOMY FEATURES THAT BUYERS HAVE BEEN WAITING FOR

NEW... Improved Stok-A-Fire

De Luxe Model

WITH THE EXCLUSIVE COAL-O-METER THAT PROVIDES AUTOMATIC AIR AND COAL CONTROL ASSURING PEAK EFFICIENCY AND PERFORMANCE AT ALL TIMES

EXCLUSIVE RETORT FEATURES INCREASE HEATING EFFICIENCY

A NEW HIGH IN STYLING OPERATING EFFICIENCY —AND VALUE!

America's most beautiful stoker with smartly streamlined style and luxury finish.

Patents Pending

This is IT! The New, Improved STOK-A-FIRE De Luxe model! An entirely new and better method of stoker operation giving the advantages of *automatic heat* in a degree never obtainable before. A high quality stoker at a LOW PRICE made possible by our facilities, 14 years' stoker manufacturing and servicing experience, and our mass production methods.

The New, Improved STOK-A-FIRE De Luxe model—the latest and greatest advancement of an organization noted for pioneering stoker improvements—offers a bigger-than-ever opportunity for bigger sales and profits. Write us at once—or use coupon below—for desirable franchise still available.

STOK-A-FIRE CO.
6506 OLIVE BOULEVARD
ST. LOUIS MO.

Plus MANY OTHER OUTSTANDING FEATURES

★ **SMOKE-BACK CONTROL** airblast surrounding smoke pipe prevents coal distillation

★ **REJECTOR SYSTEM** reduces jamming hazards by expelling foreign objects from feed screw

★ **LEAK-PROOF AIR FEED** built-in construction supplies ALL the air direct to retort

★ **QUALITY PLUS ECONOMY** a high quality stoker at a low price due to our experience and facilities for mass production.

★ **WELDED CONSTRUCTION** sturdy steel electrically welded into one wear-defying piece.

★ **AUTOMATIC AIR-REGULATOR** automatically provides exact amount of air for rate of coal feed.

Write for Franchise TODAY

☐ Without obligating me in any way, please send me full information on the STOK-A-FIRE franchise. ☐ Send STOK-A-FIRE literature.

Name_____

Address_____

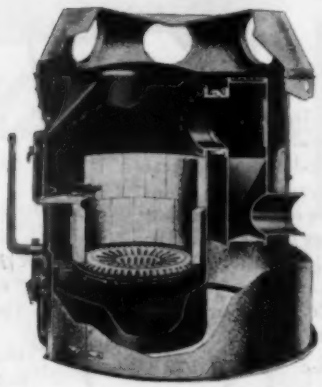
City_____ State_____

Rudy Plans for You . . .

NEW DESIGNS
NEW PERFORMANCE
NEW DEALER HELPS
NEW MERCHANDISING PLANS

RUDY XM SERIES FURNACES

Rudy XM and ZM series steel coal gravity furnaces, complete with 26 gauge galvanized steel casings and hoods, are now ready for shipment. Not "Victory" models, Rudy units have the same riveted and welded features and sturdy dependable design that have always made the Rudy line profitable to handle.



There is a full line of Rudy sizes for you to choose from.

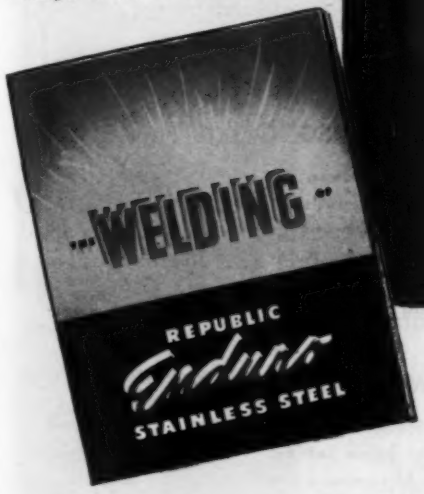
Get ready for the Fall rush. Write today for details on the XM series line and Rudy's attractive discount policy

RUDY FURNACE COMPANY • DOWAGIAC, MICH.

EVEN FINER RUDY PRODUCTS FOR THE WORLD OF TOMORROW

ARE YOU READY... for a bigger-than-ever STAINLESS STEEL MARKET?

Free *Two valuable books containing information and recommendations on various methods of fabricating and welding Republic ENDURO Stainless Steel. Write for them.*



Wise, indeed is the sheet metal contractor who is getting ready NOW to handle his share of the profitable post-war stainless steel business.

Why? Because stainless sheet metal work, in addition to providing a high margin of profit, also builds a reputation for quality craftsmanship which brings in repeat orders.

Whether yours is a large or small shop, you will find it easy to work Republic ENDURO Stainless Steel by all modern methods.

If you have not already received copies of the two books, illustrated at the left, "The Fabrication of Republic ENDURO Stainless Steel" and "The Welding of Republic ENDURO Stainless Steel", write for yours today. Both books are free to sheet metal contractors.

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

Republic
ENDURO STAINLESS STEEL
Reg. U. S. Pat. Off.

Other Republic Products include Black, G

3 MILLION FURNACE REPLACEMENTS will be made—now, and during the first five years following the war. *Your* community will share in this highly remunerative business, and *you* can profit directly—both from installing new furnaces and from the sale and installation of "A-P" 3-Piece Automatic Regulator Sets.

EVERYONE wants automatic heat control for hand-fired furnaces—and you're the one to supply your trade with this modern, efficient "A-P" Automatic 3-Piece Regulator Set:

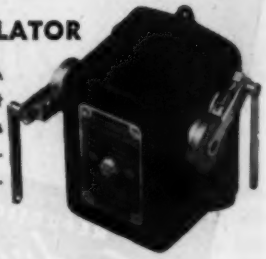
AUTOMATIC PRODUCTS COMPANY

2470 N. THIRTY-SECOND STREET MILWAUKEE 10, WISCONSIN

INSTALLATION KIT
Each set is shipped with complete installation kit—pulleys, two kinds of wire, staples, chain, and transformer.

"A-P" DAMPER REGULATOR

with unusual lifting power. A sturdy unit—corrosion resistant for basement installation—needs only once-a-year oiling. Automatically relatches at next operation after stoking fire.



"A-P" WALL THERMOMETER

Controls room temperature to a degree above or below setting. Easy to install. Attractive cover contains accurate thermometer. Convenient manual setting controls steady heat.

"A-P" LIMIT CONTROL

—prevents built-up furnace heat from making room temperature greatly exceed thermostat setting. Set dial according to season and outside temperature—stopping overheating and waste of fuel.

DEPENDABLE *Controls*

FOR HEATING • AIR CONDITIONING • REFRIGERATION

PREMIER furnace company

DOWAGIAC
MICHIGAN

A Message To All Independent Furnace Dealers

Dear Friends:

The war is over! And the great post-war boom in heating and air conditioning equipment is here. Many thousands of heating jobs are going to be done in the months ahead. The replacement market alone will be enormous.

There's going to be a fight for this vast market — but we confidently believe that the Independent Furnace Dealer is going to get the major part of the business. He deserves it, because he alone has the experience and the ability required to make first class installations.

In this fight for business, we are going to back the Independent Dealer to the limit, because we believe in him, and we know that he will install PREMIER equipment right.

We're going to continue selling through capable Independent Dealers, under an Exclusive Franchise that assures them a protected territory. Every PREMIER Dealer will receive Factory Planning Service, the assistance of factory trained field engineers, a wealth of valuable advertising helps, and many other forms of factory cooperation.

Right now we're doing everything possible to expand production and supply you with the high quality, moderately priced equipment you need to meet your competition. Within a reasonable time we expect to again give our dealers a complete line of home comfort equipment, including everything needed for warm air heating, air conditioning, automatic fuel burning, and cooling installations.

Sincerely yours,

PREMIER FURNACE COMPANY

Write - for This Portfolio

Find out if the PREMIER Exclusive Franchise is available in your locality. Learn for yourself what immense opportunities this Franchise offers you for present profits and future success. Find out how you can do a profitable YEAR 'ROUND business with this COMPLETE line of home comfort equipment.

Sure, we have a standard motor, but . . .

Like other motor manufacturers, we have "standard" models for general-purpose applications. But we believe that a motor designed and manufactured for your particular needs can do a better job and build more goodwill for your products.

We want to make you a motor whose size, type, torque specifications and power rating are determined by requirements—not expediency. What's more, our engineering experience and manufacturing facilities make it possible to give you this custom design service with all the economies of precision mass-production.

Into your motor will be built all the features that have characterized the rugged, reliable Sunlight motors now serving in American homes: full-rated starting capacity; self-oiling cast bronze journals to reduce friction and minimize the need for servicing; full-gauge copper wire to cut down heat generation, and extra-heavy coatings of dielectric insulation on all wiring to guard against short-circuits.

In shaping your plans for new products, let Packard design a motor to do that job better. Let Packard solve your motor needs.

Buy More War Bonds

Packard

REG U.S. PAT. OFF. TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

PACKARD SUNLIGHT MOTORS for compressors . . . washing machines . . . power-driven bench tools . . . ironers . . . milk separators . . . mixing machines . . . furnace blowers . . . stokers . . . oil burners . . . water pumps . . . ventilators . . . and many other applications.

DEPENDABLE APPLIANCE MOTORS FOR TWENTY-NINE YEARS

POST WAR MODELS

of

LUXAIRE GAS-FIRED UNITS

The new, post war Luxaire Gas-Fired Air Conditioning Units and Gravity Furnaces have successfully passed the tests at the A. G. A. testing laboratory, and comply with new, stringent approval requirements of the American Gas Association.

Formal certificates of A. G. A. approval will be issued, as soon as production units are inspected and certified.

Production Will Start When Material and Man Power Are Available

As soon as material and manpower are available, production will start. The necessary dies, patterns, jigs and fixtures have already been started.

The announcement that these new Luxaire Units are ready will be made as soon as possible. At this time we cannot predict accurately when this announcement will be made.

New, Post War Luxaire Gas-Fired Units Will Be Immeasurably Better

To meet the new, stringent approval requirements of A. G. A., no portion of the heating element can exceed a temperature of 875° F. and no portion can have a temperature lower than 178° F. after the unit has been under fire for a period of approximately 20 minutes at its full-rated input.

Luxaire Units meet these requirements—and all the other new demands of American Gas Association.

The only purpose behind the new A. G. A. standards is to insure that post war models of gas-fired heating equipment are better than any that have been produced in the past.

The new Luxaire models are better—immeasurably better! Increased durability more attractive appearance, quicker assembly, easier to service—these are only a few of the advantages that have resulted from the ingenuity of Luxaire design engineers, styling experts, and the new 1945 A. G. A. approval requirements.

Watch for the announcement in this publication when Luxaire gas-fired air conditioning and gravity units are available.

Luxaire

THE C. A. OLSEN MANUFACTURING COMPANY • ELYRIA, OHIO

MONCRIEF

POST WAR MODELS

of Gas-Fired Units

Moncrief's post war line of Gas-Fired Air Conditioning units and Gravity Furnaces have complied with and successfully passed the new, rigid approval requirements in the American Gas Association testing laboratories.

A. G. A. certificates of approval will be issued, when production units are inspected and approved.

Moncrief Post War Gas-Fired Units Will Be Amazingly Better

To meet the new, rigid approval tests required in the A. G. A. laboratories, no part of the heating element, after it has been under fire for approximately 20 minutes at the full rate of input, can exceed a temperature of 875° F. Also no part can have a temperature lower than 178° F.

The sole purpose behind the new A. G. A. standards is to insure that any post war models of gas-fired heating equipment surpass any that have been produced in the past.

The new Moncrief Post War models are amazingly better! They have "eye appeal," and greater durability. They are more quickly assembled . . . easier to service—to mention just a few of the advantages that Moncrief engineers, styling experts have incorporated in the new Moncrief post war line which meets the latest A. G. A. approval requirements.

Material and Manpower Will Govern Production

Production of these units will start just as soon as material and manpower are available. The refitting of all departments with the necessary tools and fixtures is now in process.

Formal announcement when these units are available will be made at the earliest possible moment. At this writing we cannot predict when that moment will be.

Watch for the announcement in this publication when Moncrief gas-fired air conditioning and gravity units are available.

MONCRIEF
SINCE 1895

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because the steel base is ductile, easy to bend and to seam. And you can't buy a galvanized sheet with better resistance to flaking, peeling and cracking under forming operations!

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because of the full, bright spangles, insuring pleasing appearance in the finished job, and a product which has added sales appeal.

Plan to use Bethlehem galvanized sheets on your next job. They'll give all-round satisfaction! Full information at your jobber, or at the nearest Bethlehem district office—or write direct to Bethlehem, Pa.

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"DL" FLOAT VALVES

A "DL" Float Valve installed on a space heater, furnace, water heater or stove is evidence of a reliable product — good indication that the manufacturer has high standards of design, materials and workmanship—and that the whole unit will provide the utmost satisfaction to you and your customers.

It is the sort of a product you will want to sell.

"DL" Float Valves are simple and extremely dependable. They may be taken apart for cleaning with only a screwdriver for a tool kit.

They embody many features of advanced design, one of which is a simple, effective temperature compensation device to assure steady even fuel flow, regardless of fuel temperatures.

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Petro's Resources, Engineering Leadership and Long Experience will be Outstanding Selling Features

When unrestricted heating business is again possible, competition will be unrestricted, too! Then heating men will need real selling features to help them increase the volume of their business – profitably!

Petro Oil Burners – noted for their smoother performance and great fuel economy – products of the oldest and largest organization in the world devoted solely to oil heating, will provide convincing sales features that will withstand the challenge of *any* competition!

Petro Oil Heating Equipment will be available through established wholesalers in your territory.

Army came to Petro for a compact tank engine heater, for quick-starting in cold weather and got what it wanted. Operates on same fuel as tank engine.

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IMMEDIATE SHIPMENT FROM RYERSON STOCKS

This may not be news to you—but government restrictions have been lifted on the sale of steel products by warehouses. You can now obtain steel from stock in every form without red tape—only rated priority orders take precedence. This is a welcome relief for all of us. A small part of the victory you and we have worked so hard to win.

Stocks are still not completely balanced from a size standpoint but if one plant hasn't the particular steel you need, we can easily ship from a neighboring plant, or suggest a suitable alternate. As you reconvert and step-up production for peace, let us work with you whenever you need steel. Whether it is a single piece or many tons you will always receive the same prompt, personal service.

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OPA is in "Our Hair"

ON AUGUST 16 Chester Bowles, head of the Office of Price Administration, announced OPA's five point program to stabilize the national economy during the transition period. Under Point 4 he said: "Our forthcoming program of dollars and cents prices on many building materials and services will help landlords to maintain and build dwellings at costs that will keep present rentals profitable. Our building cost program will protect millions of soldiers and war workers who have been dreaming of building a home of their own."

The significance of this statement was overlooked by many. The truth seems to be this: The plan drawn up by the Building Materials Branch and the Industrial Materials Price Division authorizes OPA to set an individual selling price on each individual piece of equipment or type of material or on the house as a whole. And in the words of Mr. Bowles, such prices would be kept in effect as long as OPA thinks price control is needed.

Some Washington business reporting agencies profess to see in this move a control which would be maintained in effect through 1946—even into 1947. Control of inflation in the construction field, to avoid another building boom and bust, say these reporters, is the intention of OPA.

But the plan gets into difficulties because the program calls for each local OPA office to set its own prices for lumber, furnaces, masonry, roofing, insulation, mechanical equipment, and construction services. Every reader can easily imagine what a confusion of prices and rulings would result.

Building industry leaders, generally, are up in arms over this proposal. They say the plan will kill all incentive to build new houses. Further, say these leaders, the plan would for the first time in our history rigidly limit the profit margins of every business man or contractor in the building field.

According to Producers Council (a national organization of manufacturers of building materials and equipment) the OPA plan also includes the proposal for OPA to appraise and study each individual plan for every single house to be built in any locality in the country. This would require, says Producers Council, an OPA organization large enough to make 500,000 to 1,000,000 appraisals and surveys each year. And there is, says the Council, no experience to guide OPA in its unprecedented plan to stipulate the profit margins of wholesalers, contractors and builders—almost one-half million business firms. Builders and contractors, the Council rightly points out, might be required to wait weeks and months for approval on projects.

What can be done about it?

It seems to us that the only way to stop such a move is through Congress. President Truman has publicly approved price control of construction to avoid inflation in the home building field. Neither as individuals or as small associations can our industry hope to object loud enough to be heard by OPA.

But as small associations, as state associations, as national associations of contractors, wholesalers and manufacturers this industry can get hearings from members of Congress.

All this concern over something which has not yet been put into effect may be slightly premature, but from past experiences we know that what OPA proposes one day OPA puts into effect a short time later. We are, then, forewarned. The sure way to stop any such schemes is to get Congress on the job—now. Lately, Congress has had several bones to pick with OPA—it well may be that if we can prove the construction industry can't operate under price restrictions Congress will be glad to know about it, for Congress looks to the construction industry to help tide the nation over the transition period.

This brief summary of the situation is "thrown out on the table" for consideration. Readers might talk with plumbers, electricians, other contractors in their area. If all are agreed this kind of control is detrimental and harmful, then as a body the group can tell their Congressman how they feel—and why.

Partnership or Corporation?*

[Part I]

Advantages and Disadvantages of each method of setting up your business

Reprinted from a report of the same title prepared by Research Institute of America.

Check-List of Relative Advantages

PARTNERSHIP	CORPORATION
Income not subject to double tax when distributed.	Greater proportionate tax reduction in post-war period probable.
No penalty for retaining earnings in business.	Lower normal tax and surtax rates at present.
No excess profits tax, capital stock tax or declared value excess-profits tax.	Ease of obtaining new capital.
Reduced state taxes.	Limited liability.
Possibility of dividing income through formation of "family partnerships."	Continuous existence.
Business loss deductible from personal income.	Ease of making gifts and transferring interests.
Tax-exempt income and capital gains not converted to fully taxable, ordinary income on distribution.	Ability to split business up into several units.
Partner's "salary" not subject to payroll taxes.	Special tax benefits for certain corporations engaged in foreign trade.
Partner's "salary" not subject to salary stabilization.	Stockholder-employees receive payroll tax benefits.
Possibility of eliminating all employees from payroll taxes, salary stabilization and WMC regulations.	Stockholder-employees may be included in any pension or profit-sharing plan of the corporation.
Lack of formalities in starting business.	
Freedom of expanding into other states.	
Profits distributable in any ratio. Need not be related to investment.	

DIFFERENT legal responsibilities and consequences such as the extent of personal liability, the sharing of profits, the transfer of interests, the length of business life depend on whether a business operates as a corporation, partnership, sole proprietorship, joint stock company, business trust, etc.

An important legal distinction between a corporation and some other form of doing business arises at the very beginning of the enterprise. In the case of the individual proprietorship, practically no formalities are necessary. The individual is free to set himself up in business without expense, contracts or agreements other than may be required for a state license or state registration of the trade name under which the individual plans to operate.

In the case of a partnership, the only additional formality is the drawing up of a partnership agreement providing for the division of profits, the relative burden of losses, the extent of each partner's authority, whether or not a partner's heirs will inherit his interest, any limitation on personal liability, etc. A joint venture, pool, syndicate, or any other enterprise in which individuals agree to conduct a temporary or permanent business simply by agreement among themselves is treated as a partnership.

The corporation, on the other hand, being a "creature of the state," must comply with all the requirements laid down by its creator. Articles of incorporation must be drawn up. By-laws must be passed. Then, if the corporation intends to sell stock to the public, stock prospectuses must be submitted to the state's "Blue-Sky" Commission, and possibly to the Securities and Exchange Commission. All of these requirements necessitate the services of experts, and incorporation can become a very expensive procedure.

Organization expenses may not be deducted as an ordinary and necessary business expense, nor may they be amortized for tax purposes except where the charter is limited to a specified number of years. Most corporations write off their organization expenses despite the lack of tax benefit. When that procedure is followed, it must be remembered that invested capital for excess profits tax purposes should not be decreased by the amounts written off.

What Is Your Liability?

Ask any businessman, lawyer or accountant what the chief advantage of a corporation is, and his reply is almost sure to be, "limited liability." This means, of course, that a stockholder won't have to dig into his personal fortune to make good any debts of the corporation. He may lose all the money he paid for the stock, but ordinarily no more than that. In the case of a partnership or individual proprietorship, on the other hand, business creditors have the right to seek payment from the individual's personal financial resources.

But is this limited liability feature of the corporation really as important as it is generally thought to be? Insurance can always take care of many types of possible liability. The persons who benefit most from the limited liability aspect of the corporation are the stockholders of larger corporations, who look upon their ownership merely as an investment and take no active part in management. It is far less important to the stockholders of a close corporation. In many cases, their limited liability is to a

The Research Institute of America is a unique organization which functions as liaison between government and industry, rendering advice and counsel to its more than 30,000 members among professional and business firms and government agencies and bureaus. The Institute's Reports on current legislation and economic trends, from which this article was adapted, clarify government regulations and restrictive measures for the business man and his professional advisors. Both the Washington and New York Institute Editorial Staffs of nationally recognized legal and economic analysts, headed by Leo Cherne, Editor-in-Chief, work at all times in close cooperation with government authorities.

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large extent purely theoretical, for banks and other creditors often require their personal indorsement of corporate loans.

Limited liability, moreover, is not always restricted to corporations. A limited partnership can yield the same benefits. This type of partnership may be formed in either of two ways:

1. By compliance with statutes authorizing limited partnerships. In many states, there can be limited partners only where there are also general partners.

2. By so providing in the partnership articles. For such an agreement to be effective, however, the limited liability feature must be called to the attention of creditors.

Length of Life

A close second to limited liability as the greatest advantage of the corporation is its continuous existence. Regardless of changes in ownership, the corporation can carry on as a separate legal entity until the life period stated in its charter runs out. This period may range from a specified number of years to perpetuity, depending on the law of the state in which the corporation is formed.

In contrast, the life of a partnership is subject to many hazards, any one of which may effectively put an end to its business existence. Automatic dissolution of the partnership follows a partner's death, bankruptcy or mental incompetence. Similarly, if a partner withdraws or sells his interest in the partnership, even with the consent of associates, the old partnership no longer exists.

The partnership articles may provide that a partner's heir or some other specified person will succeed to his status in case of death, or a similar agreement may be reached by the partners sometime after the signing of the partnership articles. Other agreements may be made to provide that the interest of a deceased partner will be purchased by the survivors—and business life insurance is often utilized to facilitate the purchase. But in either case, the old partnership does not continue.

A corporation does not, of course, have to continue in existence for its anticipated span of years. Voluntary dissolution can always cut it short. If a minority resist dissolution, the majority stockholders may petition a court to dissolve the corporation by judical decree. Minority stockholders, too, may resort to court action to accomplish dissolution of a corporation, if they have proper grounds for doing so. And the state itself retains the power to declare the corporate charter forfeited if the corporation fails to comply with the state statutes.

One of the most marked legal distinctions between a corporation and other forms of doing business becomes evident when changes in ownership are considered. The capital stock system used both in corporations and joint stock companies provides a means by which the shareholder can sell or give away his interest in the firm without the consent of his co-owners. Yet the corporation continues in existence as the same entity, even though it may be under entirely different control.

A partner has a less flexible investment than a stockholder. He cannot expand or contract his interest without the consent of his partners. He can withdraw only by mutual agreement, or in accordance with the terms laid out in the partnership agreement. He cannot pledge his partnership interest as collateral for a loan. He cannot dispose of his interest by will, except with the consent of the other partners.

Management Problems

In the day-to-day functioning of a business organization, differences between forms of doing business continue to crop up. In a corporation the stockholders, voting according to their proportionate ownership of voting stock, elect a board of directors to handle the management problems. These directors, in turn, usually select officers and agents, who perform the actual functions of management under the supervision of the board. Only the actions of these directors, officers and agents can be binding on the corporation. No stockholder who is not also a director, officer, or agent can bind the corporation by his individual actions. The same is true of members of a joint stock association.

Partners, however, generally have equal authority in questions of management. The acts of any one partner are binding on all the other partners as long as they are within the scope of the firm's business. Thus, every partner is legally free to pursue his own course, and can enter into contracts without the knowledge or consent of any of the other partners, so long as the contracts relate to partnership business. The extent of each partner's authority may be limited in the articles of partnership, but this limitation must be brought to the attention of creditors to be effective.

Because the state continues to take a paternal interest in a corporation long after its formation, corporate managers are sometimes plagued with a greater degree of supervision than is exercised over other forms of business. The corporation must usually submit more financial reports and file more tax returns. The state is likely to have rules which must be followed when the corporation wants to distribute profits, reduce or increase its capital stock, dispose of some of its assets, etc. In a partnership or individual proprietorship, matters such as these are simply questions of internal business policy, and it is not necessary to consult governmental agencies or statutes before arriving at a decision.

Whenever a corporation finds it desirable to do business in more than one state, it immediately runs into a multitude of conditions and restrictions which each state imposes on "foreign" corporations. Unfortunately, the foreign corporation laws of the various states are far from uniform, and each new state into which business is carried presents a new problem. A partnership, on the other hand, is generally free to expand its activities into other states without securing governmental approval.

Rights of Minorities

In a partnership, as indicated previously, there is an equality of authority among the partners, unless the partnership agreement provides otherwise. But a partner may nonetheless find himself a consistent minority in the formulation of business policies. Even if he objects, he cannot sell his interest and he cannot withdraw from the partnership without the consent of his associates.

A minority stockholder in a corporation however, can usually change his investment if he chooses. Unless he does so, he may find himself at the mercy of the majority.

(*Continued on page* 142)

If Business Can't — Gov't Must

Provide Jobs in the Postwar Era*

As the war draws to an end, it is being said with increasing frequency that if business can't provide jobs in the postwar period, the government must. Sometimes it goes—if business won't do it, government will.

These are generalities. It is necessary to look more closely at some of the details *how* government would do what business is unable or unwilling to do.

The two sources of employment for individuals since the wage system began have been private business and government.

The performance of the services which are generally accepted as public responsibilities involves a certain amount of labor, hence a certain volume of employment opportunity. Government needs engineers, lawyers, policemen, firemen, teachers, janitors, clerks, truck drivers, and many other kinds of labor services. There is a limit to the number of persons who can be advantageously employed in any category, and therefore an over-all limit to the amount of employment which government can provide in the discharge of the established public functions.

Padded Payrolls or More Services

In two directions greater leeway is possible. One is by the simple expedient of padding the payrolls so that there will be an unnecessary number of clerks, typists, firemen, teachers or what not. This is the easiest and most direct way of wasting the taxpayers' money, for the value received from the excess personnel is subject to sharply diminishing returns, while the pay goes on with no adjustment to the declining value of the services performed.

A second direction in which government can create more jobs is the invention of new public services and activities. This process has been going on for a long time. It has not been inspired primarily by a sense of obligation to deal with unemployment. Rather, it has been a product of the whole trend of economic and social change. For example, the original police function was to watch and ward, the protection of persons and property against the more obvious risks of assault and robbery. With the growth of population, and especially with urban expansion has come sanitary squads, vice squads, homicide squads, and, since the automobile has dominated traffic, a considerable army of traffic police.

The extension of inspection and regulation is another example, also made necessary by the greater complexity and interdependence of modern life. All in all, there have been many entirely legitimate additions to the number and variety of jobs at the disposal of government as new responsibilities have been added.

When we go beyond the necessary and proper limits of public employment, we enter the jungle in which bureaucracy flourishes. Where there is lacking the quality and capacity of good administration and a strict control by the people over the functions and expenditures of government, there occurs a luxurious proliferation of bureaus, agencies, commissions and boards, both in the development of additional services of dubious value and in the multiplication of agencies dealing with the same subject.

This kind of provision of employment by government is part of the familiar scene. Even so, and despite the atrocious padding of payrolls that has at times occurred under it at every level of government, it serves only as the introduction to the declaration reiterated on all sides, namely, that if business can't or won't provide jobs for all, the government will.

How to Make the Jobs

Two practical questions emerge. The first is: "How will these jobs be provided?" The second is: "How will government get the money?"

As to the first question, there are three possibilities. First, there can be a further and still more luxuriant growth of the bureaucratic system. Other new public services can be invented, and the existing activities can be staffed on a bigger and better scale regardless of the value of the services rendered by the additional employees.

**A paper, "Government and Business," by Professor H. L. Lutz, Princeton University, published by the Tax Foundation, New York City.*

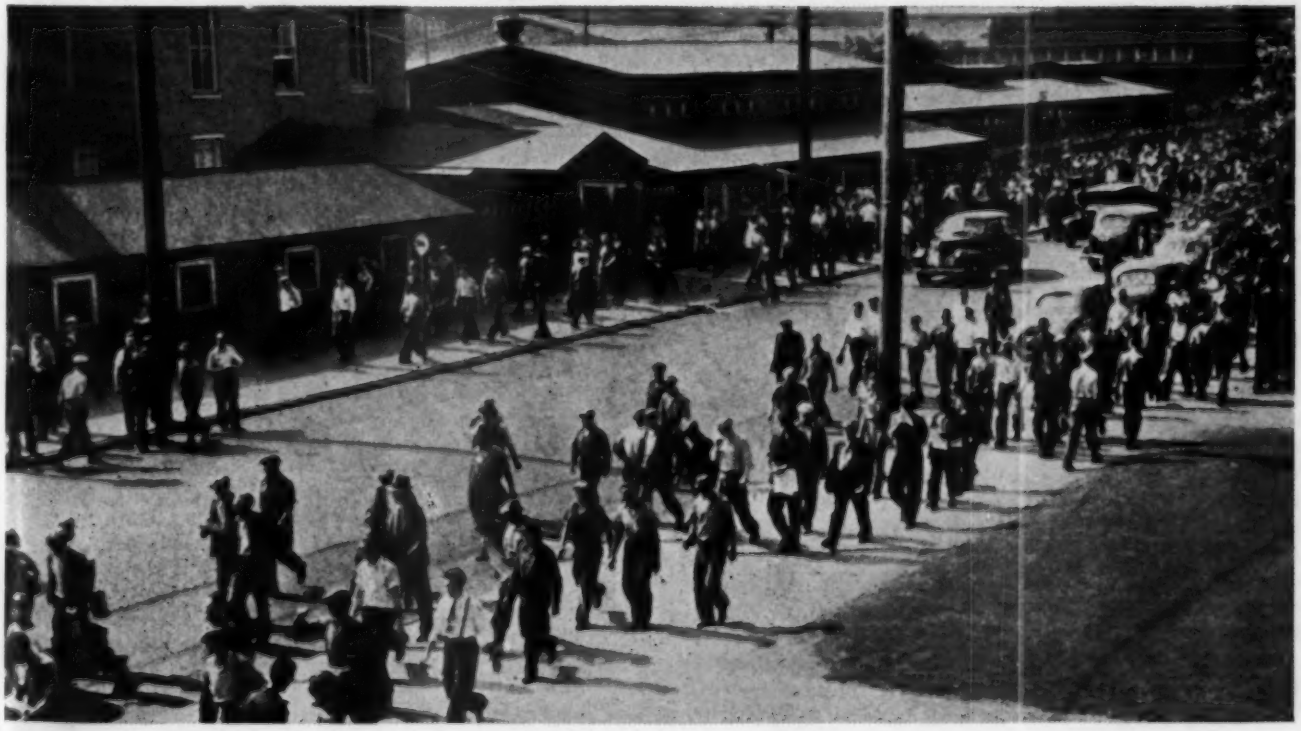
Second, government can organize and manage publicly-owned industrial undertakings. In other words, government can go into business and thus provide some of the jobs which privately-owned business could or would not provide. Just how government could in this way produce goods and services which private business could not afford to produce, would appear at first glance to be a tribute to the superior managerial capacity of elected or appointed officials; but the mystery would disappear when it developed, as it no doubt would, that the government undertaking was either exempt from such costs as taxes or negligent of various accounting procedures essential to the conservation of private capital. Any private employer could do much better than he actually does at providing jobs if some one else guaranteed his deficits and if he could always be sure that there were more capital funds where his initial capital came from, in case he lost that.

A third way is by engaging in various improvement projects usually lumped together under the rubric "public works." These improvements include principally roads and buildings, but the term covers every variety of construction project. They provide employment on the job, and, according to their character, a variable amount of work off the job, as in cement plants to supply material for road building. Their economic and social usefulness may be evident, or open to debate, or clearly non-existent. The real situation in this respect is often not conclusively demonstrable or measurable. Vagueness of economic or social advantage is far more likely to be the case when vast public works programs are undertaken primarily for the purpose of giving employment than when they are done in response to general community agreement as to their need.

What may be said of these steps that are available to government to provide jobs when private business can't—or won't—do it? The superficial result is that employment is created and wages are paid. Equally superficial analysis deduces that the purchasing power of those wages will become that added margin of consumer demand required to set in motion all the forces and factors of production and thus induce private industry to enlarge its employment beyond the scope existing prior to the government spending.

According to this pump-priming theory, this resumption of private employment after the stimulus provided by the spending of the funds passed out by government should reduce the amount of unemployment and hence enable the government to curtail its own employment program. It did not happen so during the 1930's, and the spenders were obliged to carpenter out an entirely new doctrine to explain the failure of pump-priming and to justify the continuance of deficit financing.

If it were true that the prime essential of prosperity were the maintenance of consumer purchasing power, regardless of the equivalent given in some productive activity or function for that income, then this condition could be established and maintained quite as effectively by simply printing and passing out greenbacks as by any legerdemain of public industry or public works. True, the delivery of greenbacks to the deserving unemployed would be very like a dole, a payment for doing nothing. But if a person is "employed" on a project which has no economic or social value, he is producing nothing and his so-called wage is, in reality, a dole. The wages paid for leaf-raking under PWA were quickly recognized by the recipients for what they were. It is an impeachment of the intelligence of American workers to assume that they do not quickly perceive that what they are doing need bear no relation to the pay, provided there is some authority either strong enough or willing enough to assure that pay. The government is willing enough to tolerate and pay wages for work done at the "government stroke," and the conscientious worker learns that he can get



paid well for doing little. If the employer finds that the workers, as consumers, cannot afford to buy what the workers, as producers, have made, private employment is curtailed. If the workers, as consumers, are given purchasing power in the form of wages which may have been paid for creating no values whatever in useful goods or services, the resulting competition of consumers for the available goods leads to inflation.

The idea of support or guarantee by government or by some organized group influence has supplanted the old economic disciplines. The farmer wants government guarantee of crop prices, instead of regulating production according to the market. Labor wants wages established at a level such that the products can be sold only by public supplements to private purchasing power, instead of being paid according to efficiency. Business is willing that some government corporation assume various risks that once were borne, without question, by individuals. In many directions, there is a naive belief that the law of supply and demand can be, or has been repealed. But what has really happened is that government has stepped in to hold the bag, to support prices and wages and credits for as long as this is possible, under a law of supply and demand that is still operative.

In passing, it should be noted that this policy of artificial maintenance of prices, wages, etc., is strongly inconsistent with the plans for the new world brotherhood. Other countries, let us say, will need food but they can't afford to buy American wheat that is priced on a parity with an artificial wage level. They will need clothing but they can't afford to buy American cotton for the same reason. To put American products into those markets will require a second subsidy from the federal treasury, the first having been given to the American farmers under the crop loan and price support system, and to the American workers under a wage support system which in turn rests on farm parity prices. The program elaborated at Bretton Woods is designed to provide the mechanism for subsidizing exports, and of eventually transferring to the taxpayers, the cost of this type of internationalism.

How to Get the Money

So much for how the government will provide jobs when private business does not do this. The second aspect of the problem, which is left quite as much in the air as the first in the current discussion, relates to the manner in which government is to get the means of payment on the scale required to remove large numbers of persons from the unemployment rolls.

Again there are three major possibilities. The first is by taxation. It is necessary to distinguish here between the use of taxation to obtain relief funds to be distributed according to relief standards, and its use to provide funds on the scale required to pay wages to a large number at the prevailing rates. The former objective could probably be accomplished, since the amount involved would not be so large nor would its duration be extensive. Moreover, the differential between relief standards and wage standards would be sufficient to provide an incentive to terminate the relief status as promptly as possible.

On the other hand, if taxation were to be used to provide a revenue large enough to pay the prevailing wage, it would be equivalent to compelling those private businesses that were still operating to pay for labor services at a rate beyond what they could afford to pay for that labor were they to employ it.

A second source of government funds is borrowing from individuals, from banks or from both classes of investors in some combination. It must be kept in mind that the purpose of this borrowing is supposed to be that of obtaining funds with which to pay the wages of those persons whom private business is unable or unwilling to employ at the time. If the work at which government proposes to put the individuals who would otherwise be unemployed is unproductive, the loans made for the purpose have from the outset one important characteristic of a bad investment. Either an individual or a bank that was asked to make a private loan, the proceeds of which were to be used in an unproductive project, would decide that it would be a bad investment. It is equally an intrinsically bad investment when one loans to government for such a purpose.

This characteristic does not immediately affect the government credit, since the taxing power can be used to support it. But the taxes will fall on the active business firms and the employed workers, who will in time be adversely affected by exactions imposed for such purposes. They will go out of business, or work less, or quit entirely.

A third source of government funds is the issue of paper money. This is a kind of forced loan, in a transaction in which the persons who are provided with jobs by government are the initial public creditors. Unless the paper money is given standing by government decree through being made legal tender, it would not circulate very far beyond the original holders.

Business Foots the Bill

It is clear that government, as such, has no resources with which it can provide jobs and pay wages. Its ability to obtain revenue and its credit alike rest on the economic vigor of the people. Therefore, when government sets out to do something which the people as individuals cannot or will not do, it must be understood that there are definite limits to such an undertaking.

It will be said, however, that the governmental action in providing jobs would ordinarily be kept within the proper limits, since it would be simply an occasional priming of the pump. This is not the way the matter is being stated in the current public discussions and promises by politicians and others. They make no reservations or qualifications, and they convey the impression that government can and will go to any length, both with respect to the number and the duration of the jobs. In such assertions, it is implied that government's resources for this task are limitless, and it is precisely this implication which needs to be scrutinized and criticized. Moreover, it is implied that continuous, large scale deficit financing is as good a way to generate prosperity as any other. This implication likewise requires examination.

The argument for public deficits as a source of prosperity assumes the following chain or sequence of relationships. Private business cannot afford to hire workers because the product is not being sold at a price that will cover the cost. The reason for

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Arnold Kruckman's

Washington Letter

AFL - CIO Similarities and Differences

An official of the Department of Labor is of the considered opinion that the way the CIO and the AFL have planned to use the money they collected from their members during the war is the most striking illustration available of the fundamental differences between the spirit and purpose of the two great American labor groups.

The AFL, primarily an organization devoted to the business of labor money-making, is investing its funds in war bonds and other bonds of the United States, as well as in sound business enterprises. The CIO, on the other hand, is putting its money in propaganda, which it calls legislative and educational campaigns, to build morale and security. It would be possible to dig up the exact fiscal story of all Unions, by much troublesome effort, and by a thickskinned imperviousness. The data are legally available, but Unions are so close-mouthed about their affairs that you feel like a spy when you ask routine questions for the most ordinary information.

Unions Financial Picture

In their relations to non-Union outsiders the Unionists have not yet won their way beyond a blanket suspiciousness, at least in the Capital of their country. A. C. Croft, president of the National Foremen's Institute, recently was credited with reporting that six of the larger Unions in the AFL have over $61,000,000 in their treasuries. The United Mine Workers, shortly expected to go back in the AFL fold, are credited with $12,000,000; and the independent aristocrats of organized labor, the Railroad Brotherhoods, report $73,000,000. The three top CIO Unions, on the other hand, are said to have a total of $12,000,000; and during the past three months the CIO United Automobile Workers, with over a million members, is reported to have spent more money than it collected.

The picture, as sketched, is itself indicative of the situation within the groups. It is apparent that each Union in the AFL or CIO or the Railroad Brotherhoods is a tight unit, independently managing its own separate affairs. This makes clearer why some of the AFL Unions are less apt to accept any modification of the system of crafts unionization than others. It also explains why Bill Green could not induce his AFL, as a whole, to accept any amelioration of the principle of crafts integration. If any AFL Union for the sake of expediency, temporarily or permanently, falls in with the trend of over-all unionization, the decision would be purely local, or singular to the particular Union.

It is ancient history, in Union annals, that the original split, over 20 years ago, stemmed from the difference over close adherence to the crafts unionization which had been a fundamental principle upon which Samuel Gompers had successfully built the AFL. By the time Bill Green succeeded to the leadership the debate over the crafts system and the over-all idea of unionization, had gathered considerable vigor, and there were great numbers in the AFL who felt that the crafts principle should be modified, not entirely as it is now embodied in the CIO, but as it was enunciated by John L. Lewis. The dispute was augmented by the clash of strong personalities.

The John L. Lewis Saga

There is little doubt, if John L. Lewis had been made head of the AFL, the CIO probably would never have come into existence. Both the appeal of the over-all, or horizontal, unionization idea, by industries instead of crafts, and the colorful force of John L. Lewis, caused the violent and dramatic secession which suddenly brought the CIO into existence. John L. Lewis unquestionably has qualities which arouse smashing conflicts. He is arbitrary, not in a petty but in a large sense. He has the gift of great leadership with the defect of the impatience of a great leader who believes in his own rightness. But the amazing loyalty of the United Mine Workers, as well as other loyalties, show that the innate intangible qualities of the man are of the kind that never leave doubt about his integrity, his utter sincerity, and the spacious quality of his genius and his own loyalty to his ideals for the welfare of those he leads.

It is a curious facet of the man's quality that he makes little effort to win friendships in the smaller sense. He inspires devotion. Those who believe in him are absolutely convinced he is selfless in the larger sense, and that he has the instinct to go the right way to the right place. Whether or not you are in sympathy with the economics or the social ideologies of labor unionism, you cannot avoid the conviction that John L. Lewis has that kind of burning patriotism which makes a man subordinate his personal fate to the ideals of his faith in his country. John L. Lewis obviously fights for the practical advantages of his Miners with every atom of his energy; but you feel that if

the time should ever come when his Miners threatened his concept of the democracy of the United States, John L. Lewis would sweep aside his Miners just as completely as he swept aside FDR when Lewis felt that Roosevelt had lost step with that integrity of individualism which is the Lewis idea of Americanism. And Lewis would accept the reversal of popularity just as stubbornly and consistently as he accepted the defeat involved in Roosevelt's victory.

Lewis will be in the news, and will have much to do with the future of organized labor in America, if he lives. It appears assured that he will take his Miners back into AFL this Fall. The word is that he will go back with all the kudos and power of his organization and his personal prestige. They think here, in labor circles, that he will inevitably overshadow Green. The thought prevalent appears to be that eventually he will again head AFL. They say Bill Green is relieved that the re-entry of Lewis has been delayed for such a length of time. Green will soon reach the age and period of service when retirement is logical. After the years of strenuous service he will undoubtedly be glad to leave to some one else the typhoon times ahead. For there is no question the immediate years ahead have problems for organized labor that will profoundly affect every phase of the national life.

AFL Respected if Not Loved

It seems the general impression that the AFL learned a valuable lesson bitterly during the first world war, and has come out of this war with better relationships among its own members and with the public and the business men. It is curious that the CIO, far more popular in Government during the Roosevelt Administration, is regarded here as being less popular, nationally, now, than the AFL. For what it is worth as informal information it may be interesting to record that in Government circles they tell you here, off the record, that the veterans are unenthusiastic about the CIO. You do not hear that the AFL is popular, but you get the impression that its rather stodgy, matter-of-fact, business-like realism, and its unemotional manner of talking business and negotiating transactions without using clubs or demonstrations, has established a sense of sound and dependable reliability. You scarcely ever hear any one say they like the AFL, or its leadership, but you often hear persons say they like to do business with the AFL and its people.

The AFL folk act like average business men representing an average American business institution. And they do very Big Business. The latest estimate, or guestimate, of total membership in *all* Unions is 15,000,000. No one seems to wish to tell exactly how many members there are in each group. The AFL group always seems to be ready to meet Management at least half way in planning regular, business-like industrial programs. Most recently it joined with the Chamber of Commerce of the United States and other groups to lay out a pattern that might be called the Atlantic Charter of Labor and Management Relations. All seemed to go well, even with the N. A. M., until the CIO was to do certain things. The CIO never did. The potential Charter has simply faded away.

Unions Approve "Full Employment"

At this time both the AFL and the CIO are supporting the Full Employment Bill, and the bill to provide $25 per week to jobless workers for 26 weeks, and the proposal to expand the Social Security coverage to white collar workers, to domestic workers, to farmers, and to professional people. The AFL was rather reluctant about the Full Employment Bill, in the beginning, which is consistent with its non-socialistic tradition. Apparently the implications of the Bill made a deep impression upon its members, and seemed like potentially good economics to Green and his colleagues. He told Senator Wagner's Banking and Currency Committee in many conventional phrases that the AFL wishes the Bill made into Law, and that it wishes the operation of the Bill should be mandatory.

AFL Policies Make Sense

Here in Washington, Green's statements and speeches are regarded generally by correspondents as the ultimate of something in the assemblage of many words that drearily say the commonplace things and express the most commonplace sentiments without one redeeming thought or phrase that expresses something new or in a new way. It took Green about 6,000 words to tell the Committee that the AFL wants the Full Employment Law because it thinks it will insure jobs to absorb surplus labor in public works. The statement was extremely careful to avoid any implication or connotation that might be regarded as an approach to socialism. It was the kind of statement a business man might make. It had significance and effect because it expressed, presumably, the opinions and wishes of the millions who belong to the AFL.

The only suggestion that might be regarded as swerving from the middle of the road was the thought that an increase in the income of workers would increase the market for business for new products and new services; and that workers with $4,000 a year income would buy more than those who have less; and that over 70% of the workers of America now receive less than $4,000 a year, and constitute the bulk of the consuming power of the nation. Green said the AFL thought it would be better business for 47,000,000 low income people to buy one suit of clothes each per year, than to continue to make it possible for only 3,500,000 people, earning $4,000 or more per year, to buy three suits each year. A friend who is a member of the National War Labor Board says that Green's speeches belong to the pattern from which come the arguments made by the representatives of the AFL on the panels of the Board. They are invariably unexciting, inclined to be dull, but they are factual, patient, and inherently wise and sensible. The men who make them do not lose their tempers, are pleasant companions, and get along very well with the representatives of industry, and generally have the goodwill of the representatives of the public.

CIO Policies "Socialistic"

On the other hand, the CIO representatives almost invariably come from the schools, often are foreign-born, frequently have Ph. D. degrees from famous universities, are brilliant, and make grand exhibitions as dialecticians, but often manage to raise the hackles of the other members of the panels because they are so damned smart and insist upon social dogma that is fascinating but does not quite fit the slow and steady jog trot of the others, including the AFL members. You hear opinions, something like this, more frequently, here, now.

There is no doubt in most Washington minds that, on the whole, Mr. Truman is guided in making his policies by very adroit survivors of the New Deal, just as most of his political appointments are assumed

(*Continued on page* 154)

NEWS SUMMARY OF THE MONTH

L-79 Revoked

DISTRIBUTION controls over plumbing, heating and cooking equipment established by Order L-79, have been removed through revocation of Order L-79 on August 17.

Originally issued in April 1942, L-79 was designed to conserve the limited supply of this equipment for the most essential needs. As most recently amended, it restricted the sale of furnaces, boilers, radiators and water heaters to rated orders and for necessary replacement. It also assigned AA-3 ratings to sellers to enable them to procure plumbing, heating and cooking equipment and repair parts for working inventories.

◆

"Repair" Orders Status

CMP Regulation 9A, used by industrial repair shops and by electricians, electrical contractors, plumbers and many other kinds of civilian repair shops, is still in effect with its assigned allotment symbol and preference rating.

The same is true of Order P-126 for repair shops servicing commercial and industrial refrigerating and air conditioning systems.

Through September 30, 1945, ratings under these two regulations may be used to order items deliverable before that date. On September 30, however, these regulations, along with many others, automatically expire, and the unfilled rated orders automatically become unrated orders.

Since rated orders must be honored before unrated ones under the conditions specified in Priorities Regulation 1, it may be to the advantage of shops doing maintenance and repair work to place rated orders now, deliverable on or before September 30, for hard-to-get items such as new fractional horsepower motors and certain refrigeration repair parts.

Likewise, CMP Regulations 5 and 5A, two of the principal WPB maintenance and repair regulations, remain in effect until the end of September, WPB said. Contractors have the privilege of using their customers' ratings, as specified in those regulations, for rated orders on hard-to-get items, deliverable on or before September 30, for maintenance and repair work for their customers.

◆

Industrial Building Freed

INDUSTRIAL construction may now be undertaken without War Production Board authorization. This relaxation of construction controls affects construction of factories, plants and other units used primarily for manufacturing, processing or assembling of goods or materials; work on units not primarily used for industrial work if the construction is to prepare a part of the unit for such work; and construction of facilities owned by a manufacturer that are necessary for handling raw materials or components, or for the distribution of his products to the retailer.

Chief among the types of work considered manufacturing, processing or assembly, for which Direction 7 to Order L-41 now permits construction without authorization, are:

(1) Mining, smelting and refining, foundries and other operations related to extraction of minerals and their conversion to finished form.

(2) Logging and lumbering operations, sawmills, planing mills, and millwork manufacturers (but not retail lumber yards).

(3) Pilot plants and industrial research laboratories.

(4) Food processing plants, slaughter houses, commercial food freezing plants, commercial cold storage warehouses and food packing plants, bottling plants, grain elevators and canneries (but not butcher or grocery stores or frozen food locker plants serving individual customers).

(5) Textile mills, cotton mills and similar establishments (but not tailors' or dressmakers' establishments).

(6) Printing and publishing establishments, including those publishing newspapers or printing books, magazines or periodicals.

Retail service establishments serving individual customers are not covered by Direction 7, WPB pointed out.

◆

CMP Ends Sept. 30

THE War Production Board has taken action to eliminate, at the end of September, the priorities control system, including the Controlled Materials Plan, and to substitute a new, limited system for use during the reconversion period.

The changes were made through amendments to Priorities Regulations 28 and 29 today. The new Priorities Regulation 29 provides:

1. Cancellation, effective at once, of all "AA" preference ratings (which includes all ratings except the special "top priority" AAA, the new military MM rating previously announced, and the new CC rating described below) on purchase orders that call for delivery *after* September 30, 1945.

2. The revocation of the Controlled Materials Plan, WPB's master plan for controlling wartime production, effective September 30, 1945.

3. Cancellation, effective at once, of all "allotments" of steel, copper and aluminum (the three "controlled materials") for the fourth and subsequent quarter .

4. Introduction of a new junior, non-extensible, civilian "CC" preference rating to be used in limited cases to break bottlenecks in reconversion and insure, when necessary, continued production and services. The new "CC" rating will be used sparingly. The applicant must show that he has not been able to get delivery without a rating, and that the item to be rated is a "bottleneck" holding up minimum production, or that it is needed for reconversion construction or other essential construction. The "CC" rating may be assigned, where needed, to increase production to eliminate "reconversion bottlenecks," or in other cases

to protect public health and welfare or prevent extraordinary hardships.

WPB says it will continue giving small business opportunity to obtain its fair share of materials. To this end, WPB officials have been instructed, in considering applications for the new "CC" rating, to give special consideration to the needs of small business.

The "CC" rating is non-extensible. It cannot be extended by a supplier to get production materials or components to make the item sold to his customer, or to replace in inventory materials used to make the item, or for any other reason.

The MM rating originally introduced under Priorities Regulation 29 for military use will be continued for the time being to support the requirements of the occupation forces and other continuing military needs.

From July 1 through September 30 the MM rating is equivalent to AA-1, and the CC rating is equivalent to AA-2. After September 30 the sequence of ratings will be AAA, MM, CC, in the order named.

Suppliers must disregard any AA ratings on purchase orders for delivery after September 30 that they have, or may receive, and must treat such orders as unrated.

On October 1 the Controlled Materials Plan will automatically expire, but until that time, deliveries of controlled materials will continue to be regulated by this plan.

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How Gas Was Released

ALL war restrictions on the acceptance of *all types* of additional residential space heating and the industrial consumption of gas by utility companies have been removed by the Office of War Utilities.

The action was taken in two steps. First was the revocation of Utilities Order U-7, which for the last three years prohibited new uses of gas by natural gas companies except as specifically authorized. At the time of its revocation the space-heating restrictions of the order applied to natural—and mixed-gas utilities in the District of Columbia, New York, Pennsylvania, Maryland, Virginia, West Virginia, Kentucky and Ohio; most other natural gas companies previously had been exempted from these provisions of the order.

Secondly, all manufactured gas utilities were given free rein to conduct promotional sales campaigns to add new space heating and industrial consumption so long as supplies of oil used for enrichment of manufactured gas remain tight. The mandatory order restricting new manufactured gas uses was revoked last spring as a consequence of V-E Day.

◆

Must Withdraw Ratings

PRIME contractors and subcontractors receiving cutbacks or cancellations of military orders must promptly withdraw the ratings they have extended to their suppliers. When notice of such a military contract termination is received by a contractor, the contractor must immediately withdraw any extensions of the rating he has made to orders placed by him with his suppliers for more than $25 worth of material. If the order is partially cancelled, the ratings extended must be reduced accordingly.

This requirement, contained in Section 944.4a of Priorities Regulation 1, does not permit a contractor to allow the extended ratings to remain in effect until his suppliers have delivered the materials for which the rating was extended and which are no longer needed to fill the cutback or terminated contract.

This section also states that if a preference rating that has been assigned to a named person is revoked, he must immediately, in the case of each order to which he has applied the rating, either cancel the order or inform his supplier that it is no longer to be treated as rated.

If the contractor has an inventory in excess of the quantities permitted under Priorities Regulation 32 and the directions to that regulation, or would have an excess if he continued to receive deliveries from his suppliers after a contract termination, he must also adjust his outstanding orders with his suppliers to the extent necessary to prevent this, in addition to withdrawing the ratings. The inventory restrictions in this regulation and direction replace those in Priorities Regulation 1 and directions to that order.

◆

Items Under MPR-591

PRODUCERS of mechanical "fixtures" used in home and office construction have now been listed for reconversion pricing methods.

The goods made eligible for new prices are characterized as "industrial materials."

Typical of the goods included are: metal weather stripping, mouldings, bindings and edgings; metal and metal clad windows and doors; conversion gas and oil burners; metal sink cabinets; steel ceiling; store fronts; registers and grills; skylights; ventilators.

The items are listed in two main groups: (1) Those called "reconversion products", as having been almost entirely out of production during the war, and (2) those that have remained in production to some extent.

Manufacturers of items in the first group are eligible for industry-wide price formulas as outlined in MPR-591 (Aug. AA, page 79).

If any manufacturers are ready to resume civilian production in advance of other members of their industry, they may come in under today's reconversion pricing provisions. If an industry-wide increase proves to be inadequate for a manufacturer, he may obtain an adjustment under the amendment.

◆

Lead Still Scarce

LEAD is still scarce, says WPB, and many pre-war users of this metal will not be able to obtain a sufficient supply in the immediate future, despite the end of the war. WPB Order M-38, which controls the use of lead, whether primary, secondary, or scrap, is still necessary and continues in force.

◆

Prices on Inventory Goods

SUPPLIERS of war goods *to the Government* whose contracts have been terminated and who elect to retain the contractor inventory, can determine quickly their price ceilings for sales of these inventories.

Where price ceilings already are established for the same materials when sold in regular commercial chan-

(*Continued on page* 140)

When Must You Rehire the Veteran?

The provisions of Section 8 of the Selective Training and Service Act of 1940 give the returning veteran, who is eligible for reemployment under the terms of the Act, an absolute right to be restored to his former position, or one of like seniority, status, and pay. This is the interpretation of the Act made by national headquarters of the Selective Service Administration, which has been supported in the federal courts. What this means to the former employer of a veteran who claims his old job is explained below.

SO MUCH has been said and written about the problems of the returning veteran that the essential facts, never altogether clear, have become even more obscure. With the return of peace and the resulting stepped up demobilization rate, it can be forecast that many of the social adjustment problems of the veteran will tend to become less acute and eventually to disappear altogether. The major remaining concern for the returning serviceman, his family, and his employer, former or prospective, is jobs.

The services have already discharged over two million men and women. The present discharge rate is in excess of 200,000 per month, and with the Army's policy of successively lowering point scores for discharge, this rate may be expected to climb steeply in the next few months. Meanwhile, hundreds of thousands of war workers have been laid off, most of them permanently, and before reconversion is an accomplished fact the unemployment figure is expected to rise into the millions. Thus, today's veteran is not returning to the abundance of jobs of all kinds that existed six or eight months ago, and as a consequence probably a much larger percentage of veterans than formerly will want their old jobs back.

Section 8 of the Selective Service Act provides that the veteran has a right to his former job or one of "like seniority, status, and pay," if he meets the following conditions:

1. He must be discharged under honorable conditions.

2. He must apply for such reinstatement within 90 days of being mustered out, or within 90 days of the end of hospitalization if continuing for less than one year after discharge.

3. He must be still able to perform previous or comparable duties.

4. He must have been a permanent, not a temporary employee, unless the employer's circumstances have so changed as to make such reemployment "impossible or unreasonable."

The law does not distinguish between those who were drafted, volunteered, or were commissioned. In other words, it makes no difference if a man was reluctantly drafted, cheerfully joined up, or applied for and received a commission—if he left his employment to enter military service, he is entitled to his old job back. Since only those discharged honorably (or under honorable conditions) are guaranteed the right to their old jobs back, the employer is not bound to rehire those with any other kind of discharge—without honor, dishonorable, bad conduct, etc.

The second point is quite clear and places upon the veteran the responsibility for applying for reemployment within the specified time.

Although the third point seems to imply that a veteran need not be rehired if he is no longer qualified to do his old job, Selective Service has made it clear that a refusal to rehire will be justified only when the veteran is suffering from physical or mental disabilities that would make it *impossible* for him to perform his former duties. In such cases, of course, the disabled veteran is provided for in other ways—e.g., pensions, vocational training—and it is unlikely that his case will be a problem to his old employer. However, if the veteran has simply lost skill or has fallen behind new methods of doing his job because of time spent in service, part of the employer's rehiring obligation is considered to be providing the necessary training to fit the veteran for his old job.

The meaning of "unreasonable" (point 4, above) has been clearly stated by the Third Circuit Court of Appeals (Kay v. General Cable Corp., Sept. 12, 1944) as follows:

"Unreasonable means more than inconvenient or undesirable. The Act [Selective Service] intends that the employee should be restored to his position even though he has been temporarily replaced by a substitute who has been able, either by greater efficiency or a more acceptable personality, to make it desirable for the employer to make the change a permanent one." Again, the Court said: "Every consideration of fairness and justice makes it imperative that the Statute should be construed as liberally as possible so that military service should entail no greater setback in the private pursuit or career of the returning soldier than is unavoidable."

It is clear from this opinion that the courts are prepared to rule in favor of the veteran in cases where the language of the law makes judicial interpretation necessary. To the employer this means that he has

the obligation of rehiring the veteran unless circumstances make such rehiring impossible, not merely inconvenient.

The Selective Service Act provides that a veteran otherwise qualified is entitled to reinstatement in his former position only if this was "other than a temporary position." National headquarters of Selective Service has said that every case must be determined in view of the facts and circumstances of the particular case, and that final determination (in case of a dispute) must be made by the federal courts. However, in Local Board Memorandum 190-A, Selective Service has laid down certain administrative policies to be used as general guides. Among these are the following:

"Other Than Temporary" Jobs

"Generally speaking, one who is employed to fill the place made vacant by a person entering military service occupies a temporary status and has no reemployment rights even though he subsequently enters service." (An exception is made here in favor of a permanent employee who is transferred into the position of another permanent employee who has left for service and then later leaves for service himself. In such a case, both employees would be entitled to their *original* positions on return.)

"While an employment for a fixed and definite period is ordinarily a 'temporary' employment, the repeated extensions of the contract of employment may indicate that such contract is intended primarily to fix the terms of employment and that the time limitation is secondary. Under such conditions, if the practice of time contracts is general in similar positions within an establishment, such employment may be considered 'other than temporary'."

It may be inferred from these general policies that the question of the permanency of a veteran's former job will also be liberally interpreted—in favor of the veteran—and unless the employer carried him on the payroll as a clearly temporary or casual employee, the veteran will be able to establish his right to get his former job back, or a job of like seniority, status, and pay.

Seniority Defined

The use of the word "seniority" in the Selective Service Act has been widely misunderstood. In Local Board Memorandum 190-A, national headquarters of the Selective Service System had this to say:

"It has been suggested that the use of 'seniority' to describe the alternative position to which the veteran might be restored was intended to limit his rights in accordance with his relative seniority, that is, his 'job rights.' However, the word 'seniority' as used in Section 8 does not, in the opinion of Selective Service, qualify in any way the veteran's right to be restored to his old job or its equivalent. The term is applied only to the *alternative* job and as a measure of its nature and to provide the minimum of alternative job which he may be given, that is, a position with seniority, status and pay equal to his old job. Until rather late in Congressional consideration and debate on Section 8, only 'status and pay' were used in describing the alternative job, but during the Congressional discussion of the bill, the benefits and rights of the veteran were, in each instance, progressively increased and strengthened. It would, therefore, seem fantastic, indeed, to assert that the Congress, by adding the term 'seniority' intended to limit or withdraw any of the veteran's benefits, particularly when it was so obviously added as further protection in measuring the benefits of the job to which he might be assigned in lieu of his former one.

"The qualifications for reinstatement in his former position which the veteran must fulfill are clearly specified, but 'seniority' is not one of them; it appears only as one factor in measuring the position which may be given the veteran in lieu of his original one."

The issue in regard to seniority and other job rights is stated by Selective Service headquarters in the following question:

"Does Section 8 give the veteran the right to be restored to employment—the actual performance of work for pay—which he left in order to enter the armed forces, regardless of his seniority position in relation to non-veteran employees in the same or similar jobs, or is the veteran's right under the statute limited to restoration of his name to a seniority roster with the privilege of returning to his job—the actual performance of work for pay—when and if his number on the seniority roster is reached, as jobs become available?"

Courts Uphold the Act

In answering this question, the Director of Selective Service interprets the law to mean that the returning veteran who meets all the reemployment conditions of eligibility required by the statute (points 1-4, above) "has an absolute right to be restored to his former position or a position of like seniority status and pay."

This administrative interpretation is supported by two decisions in the federal courts: in Kay v. General Cable Corp., noted previously, and in the recent case of Fishgold v. Sullivan Drydock & Repair Corp. of Brooklyn. In the Kay case the court decided that it was the intent of Congress to provide for the financial stability of the veteran for a period of *at least one year* following his discharge from service. In the Fishgold case the U. S. District Court of Brooklyn ruled that a veteran may not be laid off in order to retain at work a non-veteran with more seniority. The veteran in this case had been at work for seven months when he was laid off—the question was not his right to be restored to the job in the first place, but his right to retain it. In handing down his decision, the judge said: "I am not concerned with the equity of this situation or with whom the returning veteran had to displace. There is no issue here as to the collective bargaining act. The only issue in this court today is the Selective Service Act."

It is clear from this decision that the veteran has, by law, not only the right to be restored to work, but also the right to stay at work regardless of ordinary seniority rules. This, apparently, was what Congress intended in writing the Selective Service Act. The courts have merely affirmed the intention, and it is unlikely that either of these two decisions will be overruled in a higher court.

The Selective Service Act has been extended to April, 1946. Substitute legislation will undoubtedly be enacted before that time to define the rights of veterans. It is impossible to predict, however, whether Congress will see fit to retain all the rights of veterans under the present act, or whether the legislators will think it wise to modify them. As the law stands, conflict between veterans and unions is inevitable, because the veteran is above union seniority rules for at least a year after his discharge.

Inception and Early Development of Apprenticeship Training in Chicago

The author has always been a staunch promoter of apprenticed sheet metal worker training. Scores of boys have learned their trade in the shop bearing his name. Having been the first Joint Arbitration Board president and active in apprenticeship training ever since, he is qualified to relate the history set forth here.

By Louis L. Narowetz
Narowetz Heating and Ventilating Co., Chicago

SINCE the Apprenticeship Standards formulated in Chicago have been accepted by the Federal Committee on Apprenticeship Training and are also being used as a guide in many other areas, it has been suggested that a brief history of the men who instigated the Chicago program and of its early operation may be of interest.

The program had its beginning under men like the late "Ed" Wilson of L. H. Prentice, "Ed" Markham of Andrews and Johnson, and "Sailor" Dick Unlund, all of whom were practical men, expert in their craft and mindful of their duty to perpetuate the sheet metal trade. These men, in cooperation with officers of Local 73, led by President Tom Redding, served on the first arbitration boards directing the training of boys and establishing the qualifications required of an indentured boy in order that he qualify for his Journeyman's card.

In those days a boy was customarily brought into the trade by relatives or close family associates—his father, brother, uncle, or neighbor. It was not required then that the boy be a high school graduate—some of our mechanics were not privileged to go beyond the third grade before being obliged to help with their own support. It is worth pointing out that many of our present day successful contractors spring from such boys as these—perhaps this indicates that as much depends upon the individual as upon his training.

In the beginning a boy was taught the use of tools, soldering and how to make a neat double seam; how to peen an elbow and flange the edges for a riveted type of round pipe elbow. During this time he was urged to get some book, like "Kittredge," showing detailed drafting and the art of triangulation so essential to the sheet metal worker in layout work. If he was indentured in a general sheet metal shop, he would learn cornice, skylight, window, door, and other work connected with so-called outside sheet metal work, as distinguished from ventilation and pipe work. Shop and manual training were emphasized far more than academic training in the old days.

There was no set length of service for an apprentice. It was customary for a lad, who felt he could use tools, and had the intestinal fortitude, to step out and "claim" a card. The boy was usually helped by other qualified mechanics to make his own way through a busy period when men were in demand. If he held the job, he proved himself a useful mechanic, regardless of his length of training.

In the early thirties men like Jim Ryan, secretary of Local 73, and contractors who had come up from the ranks, realized that the sheet metal trade was the only craft in the construction industry which fabricated from raw material the work it assembled and erected into place, and also that engineering and design were phases of work which a boy should be privileged to understand and specialize in, were he so inclined and talented.

Recognizing this, these men got together with the representatives of three organized branches of the sheet metal industry. . . . Ventilating and Air Conditioning, General Sheet Metal and Furnace Workers . . . whose associations of contractors sponsored the advancement of apprentices. Each of these groups elected three members from their individual arbitration boards, who, with three members from Local 73, comprised twelve men who represented industry and labor in the first Joint Arbitration Board. The writer was elected the first chairman; rotating representation of each group in the chair each succeeding year.

There being harmony in labor relations, the Joint Arbitration Board set themselves to the task of exploring the needs of each branch of the sheet metal industry to work out rules and requirements of apprenticeship. It was agreed that a boy should have a high school education, and, since there was a vocational trade school available, that the school's instructor for sheet metal should be guided in his teachings for boys indentured to our contractors by the Joint Arbitration Board. In order to facilitate this, and with the permission of the school board, the instructor was invited to attend Joint Arbitration Board meetings.

After many monthly meetings, a course of four years' training with a fifth year "transitory" period was laid out. This course embraced ordinary shop practice but with the science of duct design, estimating, drafting, and sheet metal engineering directly keyed to the evolution of the sheet metal trade.

It is pleasing to note that many boys trained in this way in the past ten years have taken their places as foremen, superintendents, and estimators, and have rendered valuable service in the late war effort.

Military service has made the indenture of apprentices and their continuance at work uncertain, thereby slowing up the program, but with conversion to peacetime work now at hand, interest again is being shown by boys and their parents in the indenture of worthwhile members of the coming generation into the sheet metal trade.

The Chicago Apprenticeship Plan (Part 1)

Because apprenticeship training will be in the months to follow so important to our industry, American Artisan has been publishing during past months the apprenticeship plans of our Sheet Metal Contractors National Association, the Wisconsin State Plan and other material bearing on this problem. All these plans stem from the Chicago Plan. The Chicago Plan contains some features not found in the plans published, so because Chicago had the first recognized plan we publish here the first of two articles giving the Chicago Plan in complete detail.

Foreword

Recognizing that there is no substitute for apprenticeship, there is a definite obligation on the part of the present generation of the Sheet Metal Industry to supply means for young men who will be their successors to obtain training and education to fit them for their responsibilities. Therefore, the Air Conditioning Contractors' Alliance, the Ventilating and Air Conditioning Contractors Association of Chicago, the Sheet Metal Contractors' Association of Cook County, and the Sheet Metal Workers' International Association, Local No. 73, of Chicago and Vicinity, having jointly resolved to establish trade training for apprentices in accordance with the recommendations of the Federal Committee on Apprenticeship, have collaborated in the preparation of these standards for the administration of such trade training that will provide apprentices in the Sheet Metal Industry with opportunities to attain the efficiency and versatility required for true craftsmanship that will help immeasurably to raise the level of workmanship for the trade generally and develop the necessary background for good citizenship.

Standards of Apprenticeship

1. **Definition of "Sheet Metal Apprentice."** A "Sheet Metal Apprentice" shall mean a young man at least 16 years of age, who has agreed to work at and learn the Sheet Metal Trade in accordance with the following standards and who, with his employer, has signed a written apprenticeship agreement, which said apprenticeship agreement has been approved by the local joint Sheet Metal Apprenticeship Committee, and which shall be registered with the Federal Committee on Apprenticeship.
2. **Qualifications for Apprenticeship Applicants.** Applicants for Sheet Metal Apprenticeship, not heretofore connected with the trade, must be between the ages of 16 and 23, and should, if possible, be high school graduates or the equivalent. Exceptions may be made by the committee for those beyond the age limit who have been engaged in the trade or who have unusual qualifications. The following information shall be submitted to the Joint Sheet Metal Apprenticeship Committee by each applicant for an apprenticeship:
   (a) Application for Sheet Metal Apprenticeship.
   (b) Transcript of school courses and grades.
3. **Hiring of Apprentices.** Employers desiring an apprentice shall make application for said apprentice to the Joint Apprenticeship Committee, but in no case shall the apprentice succeed or displace a duly registered senior apprentice of Local No. 73, who has been notified to complete his trade. The employer, however, shall have the option to accept or reject any and all apprentices offered him by said committee.
4. **Obligation of Apprentice.** The applicant, before assignment to employer, will copy the following obligation in his own handwriting, and file it with the Joint Sheet Metal Apprenticeship Committee:
   "I, the undersigned, having made application to be enrolled as an apprentice with the Joint Sheet Metal Apprenticeship Committee, and having read the standards formulated by said committee providing for training of apprentices, and understanding same and all conditions therein contained, do hereby agree to serve such time and perform such manual training and study such subjects as the committee may deem necessary, to become a sheet metal worker."
5. **Term of Apprenticeship.** The term of apprenticeship shall be not less than five years (approximately 10,000 hours) of reasonably continuous employment. It shall be divided into ten (10) six-month periods of approximately 1,000 hours each, the first sixty (60) days being a probationary period.
   During the probationary period, the agreement may be canceled by either party by notifying the other, but due notice shall be given the Joint Apprenticeship Committee and the registration agency. After completion of the probationary period, the agreement may be canceled by the Joint Apprenticeship Committee for causes deemed adequate. The registration agency shall be advised of all such cancellations and the reason therefor.
6. **Work Experience.** During the term of apprenticeship, the Sheet Metal apprentice shall be given such instruction and experience in all branches of his trade, including the preparation of materials, as is necessary to develop a practical and skilled mechanic. He shall also be given experience on all new machinery, materials and substi-

tutes that may be installed in the shop or on the job during his term of apprenticeship.

7. **Suggested Schedule of Processes to be Worked by Sheet Metal Apprentices.**
   (a) General Sheet Metal Work.....6 months
   (b) Operation of hand tools and power machines .....6 months
   (c) Ventilation and air conditioning...9 months
   (d) Exhaust and blow pipe work.....6 months
   (e) Roofing, spouting, and guttering...6 months
   (f) Cornice and skylights.....4 months
   (g) Gravity and forced air furnace work and servicing the same....4 months
   (h) Warm air heating.....4 months
   (i) Special installation and specialty work .....6 months
   (j) All-around work .....9 months

   In connection with the outline above, he shall be given such training over the period of his apprenticeship in soldering, welding, and brazing that is necessary for a sheet metal journeyman.

   While the above outlines generally the type of work conducive to efficient training, allowance for variable conditions must of necessity be made.

8. **Related School Instruction.** (a) In addition to the training received on the job, the apprentice shall attend school one day each week with pay for said day during his apprenticeship, except during trade school vacation and sixty days of his probationary period. The time spent in the school shall be a part of his apprenticeship. The total number of days to be spent in school shall be 175 days and this is to be attended in the first four years of his apprenticeship.

   (b) In case of failure on the part of any apprentice to fulfill his obligations as to school attendance, the Joint Apprenticeship Committee, subject to review by the Federal Committee on Apprenticeship, may suspend or revoke his agreement, and the employer hereby agrees to carry out the instructions of the said Joint Committee in this respect. The apprentice and his parents or guardian hereby agree to abide by any such determination of the Committee.

   (c) The Joint Apprenticeship Committee recommends that courses for Sheet Metal apprentices be limited to those who are actually apprenticed in the Sheet Metal Trade in accordance with these standards.

   (d) The related classroom instruction shall be under the direction of the Department of Vocational Education. The Sheet Metal Joint Apprenticeship Committee shall act as an advisory and consultant body in determining subjects to be taught and any other problems pertaining to related education of the Sheet Metal apprentices.

9. **Curriculum to be Taught in the School.**

   First Six Months:
   Shop—Soldering, seaming, riveting, flanging, and welding.
   Mathematics—Fractions, decimals, and percentage.
   Drafting—Geometric construction, Isometric drawing, plain square and rectangular fittings.
   Related Information—Kind of fluxes and use of each.

   Second Six Months:
   Shop—Laying out and fabricating square and rectangular fittings, and welding.
   Mathematics—Mensuration and square root.
   Drafting—Square and rectangular fittings.
   Related Information—Use and care of tools and equipment.

(*Continued on page* 116)

Definitions

as herein used:

"Committee" means the Local Sheet Metal Joint Apprenticeship Committee of Chicago and Vicinity.

"Associations" mean the Air Conditioning Contractors' Alliance, the Ventilating and Air Conditioning Contractors Association of Chicago, and the Sheet Metal Contractors' Association of Cook County.

"Union" means the Sheet Metal Workers' International Association, Local No. 73, of Chicago and Vicinity.

"Agreement" means the written apprenticeship agreement between the apprentice, the employer, and the union, in which the terms and conditions of apprenticeship are set forth. Each agreement shall contain a clause which makes these Standards a part of such agreement.

"Apprentice" means a person between the ages of 16 and 23, who has agreed to work at and learn the trade of Sheet Metal and who is covered by a written agreement that has been approved by the Joint Apprenticeship Committee and registered with the Federal Committee on Apprenticeship.

"Employer" means the firm by whom the apprentice is employed.

"Supervisor of Apprentices" means the employer's agent, or the Joint Apprenticeship Committee's designated person, to perform the duties stated in the Standards of Apprenticeship.

"Registration Agency" means the Federal Committee on Apprenticeship, United States Department of Labor.

"Standards" mean this entire document, including these definitions.

SHEET METAL JOINT APPRENTICESHIP COMMITTEE
APPLICATION FOR APPRENTICESHIP

Date.....19....

Name .....
Last First Middle

Address .....
Street Address City State

Birth Date: ..... Age ..... Soc. Sec. No. .....

Place of Birth .....
City State Country

Telephone ..... Height ..... Weight .....

School Grade Completed 1 2 3 4 5 6 7 8.....
Name of School

Encircle Highest Grade Completed 9 10 11 12.....
Address

Other Schooling .....

Parent or Guardian .....
Name Address

Citizenship: American...Naturalized...1st Papers...Alien...

Married or Single .....Dependents .....

References: (Give names and addresses of two responsible persons, other than relatives, who have known you at least three years.)

.....
Name Address Phone

.....
Name Address Phone

If my application is accepted, I agree to comply with the terms and conditions of the Sheet Metal Apprenticeship Standards.

(Signed) .....

Approved by the Joint Committee ....., 19....

..... Title

Two-book Financial Recording System

By Arthur Roberts

IN PREVIOUS articles, we have outlined a costing system with forms, which enable the contractor to estimate profitably. In addition to cost-finding forms, you need financial records, which tell you what you sold, how much money you took in, how much you pay out, what obligations you incurred and did not pay for; in other words, cash and credit income, expenses, assets, liabilities, and net worth are recorded in this division of accounting.

It isn't necessary to maintain an elaborate bookkeeping system as long as the records disclose income and outgo and are diversified enough to mirror the main elements of operation. The main requisite is that the system fit the business. Do not try to make your business fit a system. A simple system comprises two books—cash-journal and ledger—the former takes care of cash and credit sales, cash and credit purchases, payments to creditors and payments on accounts receivable, miscellaneous items, such as depreciation, loss on inventory, accrued and deferred entries, etc., and all expenses. For many members of this industry, a two-book system is adequate and may handle up to $50,000 volume.

Big Operators Need Elaborate System

If, as you grow, you need a more elaborate system, books can be added. Large retailers may use a separate book for accounts receivable, accounts payable, installment accounts, cash and disbursements, sales, purchases and miscellaneous items, but many readers can combine this information in the two-book system with no loss in recording efficiency. The financial accounts record what you actually spend and take in and in many establishments this may not exceed six entries daily. The cost records involve more recording than the financial records. You may buy $100 worth of supplies and this means just two entries, one when the purchase is recorded, the other when paid, but these supplies may require 100 or more recordings on cost records from stock control cards to disbursements to jobs, and probably to an inventory sheet.

Don't Buy "Ready Made" Systems

Systems and forms are offered by a number of organizations but they are usually "shotgun" systems, designed for all businesses, from undertakers to liquor dealers. You can get satisfactory results at minimum cost by buying columnar sheets in stationery stores and writing in the heads to fit your requirements. You will have a more difficult time finding *costing forms* in a stationery store because special forms are needed for estimating and other cost work where sheet metal and heating systems are involved. That is why we exhibited our costing forms in previous articles. They were specially prepared to fit the sheet metal contracting and warm-air heating fields. The difficulty of getting adequate costing forms is probably the main reason why comparatively few members of this industry use them.

With few exceptions, all sheet metal contractors and warm air heating dealers keep financial records, some better than others, but at least they attempt to record actual income and outgo. In many cases they could do a better job with fewer books, substituting the two-book system for the more elaborate set-up they are using. This two-book system is easy to operate; it operates on the double-entry principles and you can change over from your present method to the simpler device without difficulty. If you do not feel competent to close the old books and open the new, call in an accountant and have him explain the procedure of subsequent operation.

Some Men Like Bookkeeping

Some businessmen make good bookkeepers, others do not. If you have a flair for the work, the debit-and-credit technique required for a two-book system is easy to understand and any intelligent man can get the "know-how" quickly. If you think you can get by without an accountant, quiz the stationer from whom

BUSINESS REGISTER (cash-journal)

Enter all financial transactions

Date	Item and Check Number	CASH IN BANK		CUSTOMER ACCOUNTS		SUPPLIERS ACCOUNTS		INVENTORY		SALES		
		Debit Deposited	Credit Paid Out	Debit Owing	Credit (Paid Out)	Debit (You Bought)	Credit (You Paid)	Debit (Purchased	Credit (Used-Sold)	Credit (O-C Sales)	Credit (Service)	Credit (Installations)

you buy forms and binders, the bookkeeper in your bank or at your supply house, an accountant of your acquaintance or someone in the Chamber of Commerce. They can give you pointers that should set you straight.

Part Time Accounting Pays

It isn't a bad idea to employ a part-time accountant who calls periodically, maybe one-half day each month. You can make the entries and he can check them, prepare a trial balance and profit and loss statement, work that is a little more detailed than ordinary entries in the cash-journal and postings to the ledger. Some members of this industry employing part-time accountants have them do all the work—entering, posting and preparing statements. When operating in this fashion, keep a special file in which place everything pertaining to income and outgo. One of the worst failings of sheet metal contractors and warm air dealers who employ part-time accountants is the unsystematic handling of such data. Don't expect an accountant to keep your books straight unless you turn over *all* receipts, bills, bank statements, cash register or sales register tapes and slips, etc. He is not a mind-reader, as too many seem to think. And he can do only the financial accounting work. The keeping of cost records is in your lap. You can get little help from an accountant in the costing of jobs unless he is on the job all the time, supervising the labor time, stock withdrawals and renewals, etc.

You Must "Enter" Everything

In general, the process for making entries is simple enough. Every business transaction should be recorded. If you fail here, the system falls down. Don't depend upon memory. You may record a transaction directly in the cash-journal, but because this is not always convenient, memos are used, or interim records, but they should be standardized. Don't grab any old scrap of paper to make a bookkeeping memo and don't scatter them everywhere. Keep a drawer, a metal box, file, or cash register compartment for memos. They may be written on printed forms or ordinary scratch pads or paper, or they may be inscribed automatically via cash register or sales register. Make records from memos to cash-journal at the end of every day while transactions are fresh in mind. This minimizes errors. Transferring of entries from the cash-journal to the ledger may be made weekly or monthly. Ledger entries are called postings.

The double-entry phase of financial accounting, not found on cost-finding forms, is based upon the fact that every transaction has two sides, so you record it under the accounts expressing these two sides. For example, if you collect money on an account, you increase your cash account and reduce the customer's indebtedness. If you buy goods, you add to your inventory and reduce your cash by the amount of the bill paid for the goods. Should you make this purchase on credit, you add to your stock just the same and increase your obligations by the amount of the bill, then when you pay the bill you wipe out the obligation and reduce your cash account. Every transaction has this give and take aspect. When in doubt, think behind the transaction, what did you give and what did you take, then record accordingly.

Cash and Sales Transactions

In the cash-journal, each entry has its offset, so you make two entries for every transaction; most of these entries will probably pass through the "Cash in Bank" column, either as debits or credits to cash, their offsets entered under other columns on the sheet. Bank deposit slips and check books furnish the memo recordings for many entries in the cash-journal. Suppliers' invoices, time slips, petty cash slips and recurring expenses for rent, light, heat, etc., comprise other entries. For most businesses, the entries will vary little from month to month, so once you get the hang of these recordings, you should have no trouble.

Sales are credited under "Sales" to the three main departments—installations, repairs and service, and merchandise. If you wish to departmentize further for oil burners, air conditioning systems, etc., add more columns. Information on sales is gotten from job and service envelopes, sales register slips, cash register tapes, contracts or other forms. Some businessmen have a separate sales book in which all sales are journalized for posting to the ledger, others use specially printed forms. You can do likewise, if you wish, but the cost-finding system and financial recording method we offer in AMERICAN ARTISAN need no sales book and you can use the costing forms as a basis for entries in the cash-journal. Whatever sales form you use, have a standardized procedure and file these original records carefully for easy check-back. File alphabetically.

Have a Petty Cash Fund

Much trouble in financial accounting develops from the practice of contractors dipping into their incoming cash to pay bills. In some cases it is inconvenient to pay small sums by check so the Petty Cash System was devised for this purpose. Deposit each day's cash in the bank TO THE PENNY and have all disburse-

BUSINESS REGISTER (cash-journal)

Enter all financial transactions

COST OF SALES						Job Expense (Debit)	Cost of Labor (Debit)	OVERHEAD		MISC. ENTRIES	
Job Number	Hours Worked	Materials Used (Debit)	Accessories Used (Debit)	Furnaces Sold (Debit)	Over-Counter Goods Sold (Debit)			Debit	Credit	Debit	Credit

ments pass through your checking account. In this way the entries in the cash account in your ledger will agree with your bank statement and is easily checked for discrepancies. For small disbursements, such as incoming express charges, postage, etc., use the petty cash system. Draw a check for $10 or more, enough for about one week's disbursements, cash it, place the money in a cash-box, then make cash disbursements from this box, replacing withdrawals with slips listing the payments. When the money in the cash-box gets low, draw another check, take out the slips and enter the items thereon in the cash-journal, debiting the proper accounts and crediting the cash account, which was charged originally when the check was drawn, thus wiping out the charge.

These petty cash checks are entered in the cash-journal and charged to Petty Cash in the ledger. Number all checks and enter the numbers in the cash-journal under the column provided. Those who handle incoming and outgoing items this way build their financial accounting system on a solid basis. We can't emphasize this too strongly. Some systems permit the listing of cash pay-outs in a separate column. This is okeh as long as the Petty Cash system is used. The goal is to have all disbursements pass through your checking account. If you do this, it makes no difference whether you list cash pay-outs under a separate column or use the columns under "Overhead," job expense, etc.

Classify Cash-Journal Entries

Summarize the journal entries monthly. This is done to transfer the cash-journal entries to the ledger for permanent recording and for classification of the accounts so that you can see at a glance how much you spent for light, rent, materials, etc., by merely referring to the proper page in the ledger. Cash-journal entries are made chronologically, not classified according to ledger accounts, thus the entries are scattered because your transactions occur "as is," not according to the way you classify ledger accounts. The ledger accounts are mostly monthly summaries, hence, you add your cash-journal columns up monthly and post to the ledger as one figure in most cases. Because cash-journal entries are on a debit-and-credit basis and you transfer these entries in summary form or individual recordings to the ledger, this book also shows debit and credit listings and the debits should always equal the credit if you have done your work right. The comparison of ledger debits and credits is called the trial balance and its purpose is to make sure entries have been posted properly. This is assumed to be so when the debits equal the credits.

Supplier Accounts

If you buy on credit from suppliers and give credit to customers, it is necessary to keep a detailed record with each supplier and each customer. These records are known as the Customer Ledger and the Accounts Payable Ledger. In some organizations, separate books are used, but the small businessman may make these sub-ledgers part of the general ledger. These records keep the detail of all orders and payments with each customer or supplier, the postings made from the cash-journal and a control account for Accounts Receivable and Accounts Payable is kept in the general ledger, hence, the information in the sub-ledgers is just a detail of the figures on the countrol accounts and the total of outstandings should agree with these controls. For example, if the balance on the Accounts Receivable account in the general ledger is $2,500, the open balances due from all customers in the Customer Ledger should be $2,500. Likewise, with obligations due suppliers. Use tab cards purchasable in the stationery store to make it easy to locate ledger accounts.

To prepare a profit and loss statement, you need an inventory. A physical count is best, but if this involves too much detail monthly, estimate. Do not write the estimate into the books. If you take a physical count, record it in the ledger on the page or pages you record your purchases. Close the books semi-annually or annually, but unless you know bookkeeping, this work should be left to one who does.

Help! Help!

A committee of the Sheet Metal Contractors National Ass'n has begun work on a cost accounting-estimating manual and system. Months will be required to complete the work. The first thing wanted is copies of time cards used by contractors. Will you please send to this publication two copies of your shop or job time cards and attach a note explaining why this card is especially good. Please send these immediately.

AMERICAN ARTISAN

SECTION

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

IT'S WHAT'S UNDER THE CASING THAT COUNTS!

Waterbury

The GASTITE Furnace

A GOOD FURNACE

For *You*, as a Source of Growing Profit—For *Your Customer*, as a Lasting Source of Comfort — because these are the things that we put *under the casing* in all Waterbury Furnaces:

The body is made of *steel*, because no other material equals steel for durability.

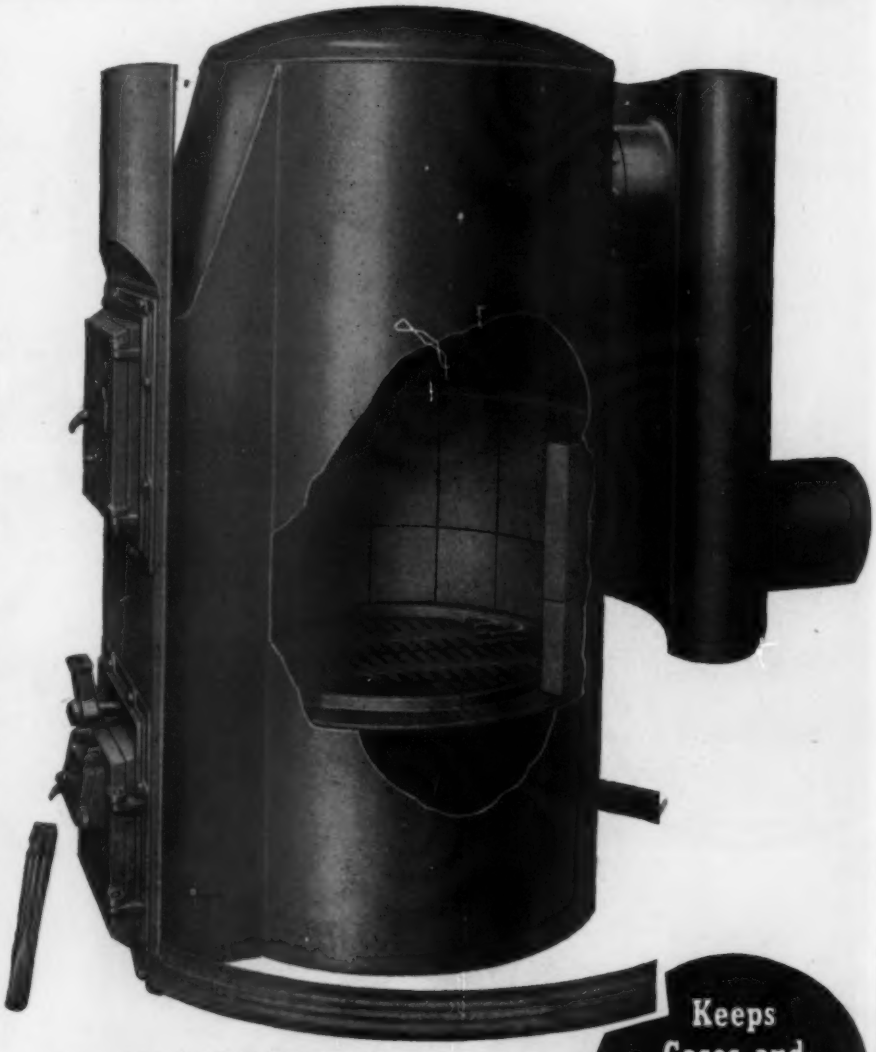
This steel body is *welded* into one solid piece that absolutely and permanently keeps all dust, dirt and gases out of the air stream.

The fire travel is long, which means fuel economy . . . the heating surfaces are large, and that means heating efficiency.

Modern engineering coordinates these and other factors into an efficient heat-making machine, every sale of which helps to build good-will and growing volume for Waterbury dealers and jobbers.

Of course, we put this superior furnace under an appropriate casing with plenty of eye appeal.

We have all the orders we can ship this year—BUT—1946 is just around the corner. It's high time to be lining up your plans —and don't overlook WATERBURY.



THE GASTITE FURNACE

MODERATE IN PRICE

HIGH IN QUALITY

Keeps Gases and Dust Out of the Heat Stream

THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.

The big old house shown at the right is typical of millions of similar structures which have reached the end of their desirable life as single family residences. The answer to what to do with them is—remodel for small apartments; the rental income returning a profit on the investment and cost of modernization. This is a profitable and active market for warm air heating dealers.

A Modernization Project for War Workers

CONTRACTOR Charles E. Tharp & Son, Ft. Wayne, Indiana, completed last winter an interesting remodeling and modernization project in a large old residence converted to four apartments. The floor plans below show the house as it was originally; plans on following pages show the new installation and all the important data used to design the system.

Here is Contractor Tharp's description of the project and what he did:

"The original installation we viewed when we were called in was a real 'old timer'—on the old piping system there had been at least three furnaces with the fourth in place and three years old when we made our survey. The first four systems were gravity with old-fashioned cast iron cold air faces in the floor and with several 'border type' warm air registers in the first floor and some double wall registers on the second floor.

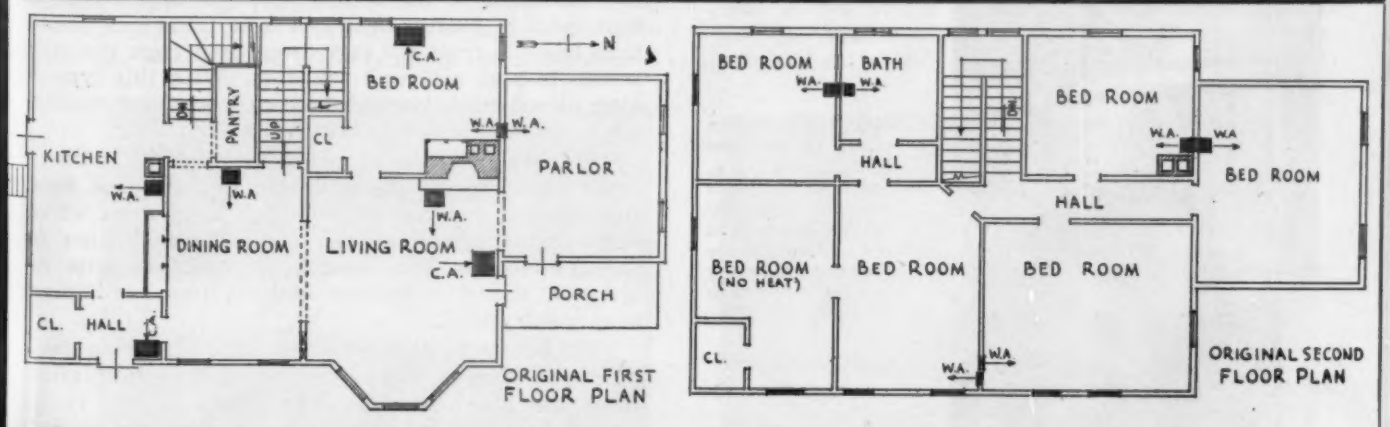
"The return air system was under the basement floor (pits) with the returns connected to the pits with galvanized iron drop pipes which, in all cases, had rusted away at the floor line. The pits were caved in along the sides and partly closed with dirt and rubbish.

"The warm air pipes were partly lead coated roofing plate with some tin pipe—much of the piping was beyond use. The total warm air piping taken off the bonnet was 543 square inches with a total return air piping of about 600 square inches.

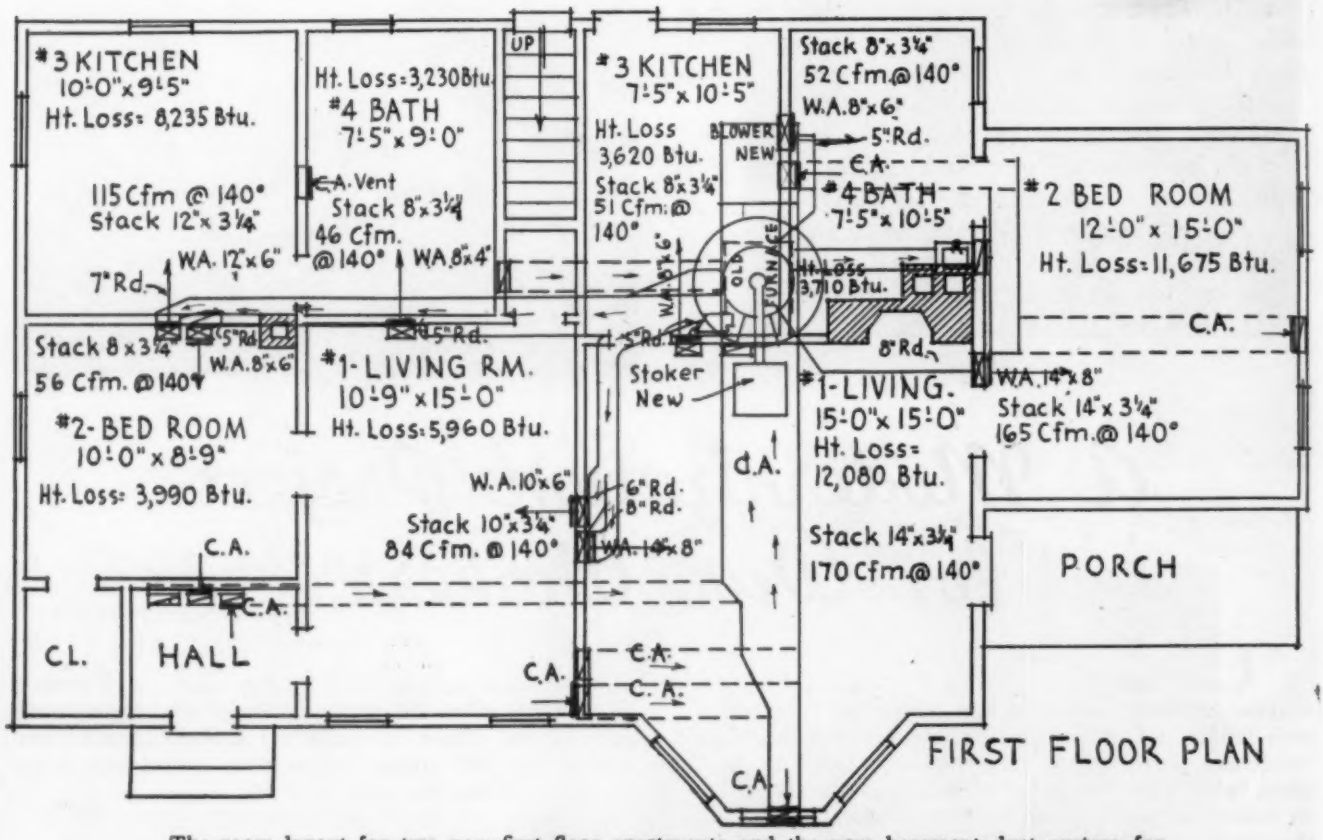
Old Furnace Used

"The fourth furnace, which was in place when we started, was in good condition. It was a 30-inch fire-pot with a capacity of roughly 1000 square inches of leader pipe—so was under-piped. The casing was in good condition, with a usable inner liner and a conventional tapered top hood. All castings were good except the radiator smoke collar, radiator cleanout door and its frame—these we replaced. In the three years this furnace had been in use it had not been re-cemented, reset or repaired.

"The old gravity furnace was in exactly the same position we would have chosen for a new furnace, so we filled up the pit and laid a new floor and repaired and reset the furnace. Above the furnace the basement is 8 feet 6 inches so there was plenty of room



Left—First floor plan, and right—second floor plan of the structure when used for a single family. Note old floor registers of the No. 1, 2, 3 heating plants and baseboard registers of No. 4 plant. All these old openings were closed.

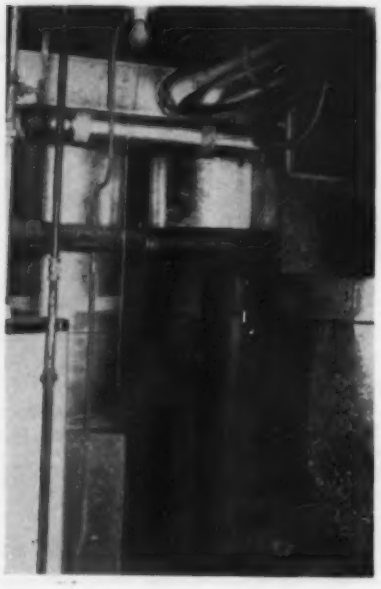


The room layout for two new first floor apartments and the new basement duct system for forced air. New registers were placed in the side walls. A stoker and blower were added. Old furnace was re-set, re-cased and given a high plenum. Riser to attic was placed in bathroom in corner of chimney and plastered in. Heating data shown for each room.

for the high plenum we recommended. However, the old furnace used the rear chimney (see original floor plans); this required a long smoke pipe which gave constant trouble, so we decided to connect the smoke pipe into the main chimney which adjoins the furnace.

"The old house was purchased by Mr. and Mrs. Millard Wells who decided to remodel the building into four apartments as shown on the new floor plans. The building is frame construction with full 4-inch studding, sheeted with tongue and groove lumber (very tight), lap siding without any paper, wood lath and plaster. When remodeling was started the second floor ceiling was covered with 4 inches of insulation.

"As the plans show, quite a bit of the interior framing was torn out and relocated to make the new rooms. As this framing was under way we roughed in the stacks which run up the partitions on the first floor and come down the partitions on the second floor.



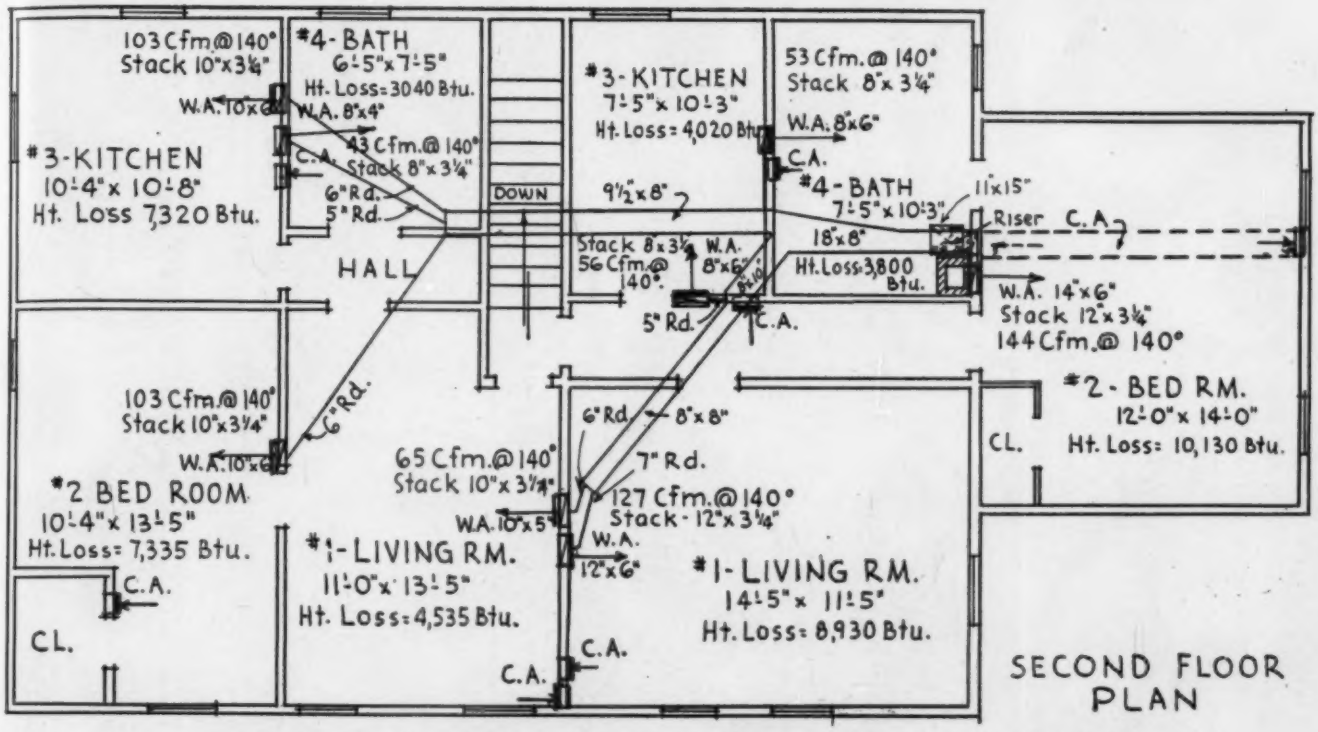
Not too good a photo of the new furnace casing, but the square plenum carried up to the joists and the shop made blower housing can be distinguished.

Attic Distribution for 2nd Floor

"For several years we have had excellent results from systems where distribution to second floor rooms is handled through the attic. Our experience leads us to believe that the 'overhead' system gives greater uniformity of air temperatures at all second floor registers than is obtained with stacks running from the basement to the second floor. It appears to us that there is greater heat loss from these long stacks than there is from the stub drops used from the attic trunks to high side wall registers. With this type of attic distribution, we find practically uniform register air temperatures throughout the second floor.

"Also, this system of attic distribution makes it much easier to get stacks up through the first floor. Our favorite location of the single large riser which supplies the attic piping is alongside a chimney or through closets. This riser is large, it has little resistance, almost no fittings and requires a minimum of carpentry work.

"The basement piping plan and the attic plan show how and where we ran our piping for this installation. Sizes are also indicated. The piping system is designed on a register velocity of 350 feet per minute; a wall stack velocity of 450 fpm; branch or individual pipe velocity of 500 fpm and trunk line velocity of 600 fpm. As noted on the plans, we used a register



Plan of second floor with attic distribution system. Registers are 6 feet above the floor; returns in the baseboard. All attic piping is insulated with one layer of air cell and a full thickness of insulation.

temperature of 140 degrees. The piping in the basement is galvanized iron—not covered, but in the attic all galvanized iron pipe (either square or round) is covered with one layer of air cell paper and then wrapped with full thickness insulating bats. Stacks are covered with one layer of asbestos paper.

Blower, Stoker, Controls

"As stated, we repaired and reset the old furnace. We knew we needed a blower for satisfactory results so we obtained an uncased 14-inch blower and motor on priority as a remodeling project to make living quarters for war workers. We built a cabinet for the blower in our own shop. We also recommended and obtained a bituminous coal stoker which was installed through the ash pit door. To control the system, we installed two thermostats—one on the first floor and the other on the second floor. These are connected in parallel so that tenants on either floor can get heat or cut heat off as needed.

"All new registers were used. Those on the first floor are placed 6 feet 6 inches above the floor; second floor registers are placed 6 feet above the floor. All new return air faces were used and these are now located in the baseboards.

Old Warm Air Stacks Now Returns

"The old warm air stacks were used now as cold air returns. This required new boots and a new basement layout as shown on the plan. Each of the four bath rooms is vented to the attic using the same stud space the plumber used for his soil pipe. A comparison between the old and the new floor plans shows there were two rooms on the second floor and one room on the first floor which had no warm air supply in the old installation. For these rooms new return air stacks were installed as shown.

"The owners of this building have been more than pleased with the results. In a letter they permitted us to use they say that the heating system has proved very economical—using approximately eleven tons of coal in five winter months of firing. They also like the two thermostats which keep everybody comfortable and satisfied."

These photographs show attic ductwork insulated as described in plan above and supported over the attic floor joists high enough to include full insulation on the bottom of the pipes. Round pipe branches to short wall stacks can be seen.

2. Location and Selection of Registers

a. Where a blower is operating almost continuously, and the heat output is operating intermittently, the temperature of the air that is delivered from the registers will vary from one to as high as [illegible]	Experience has proven that these temperature drops are satisfactory with proper selection and location of warm air registers.
b. LOG-IT WARM AIR REGISTERS SO THAT THE AIR STREAM NEVER DISCHARGES DIRECTLY INTO SPACE THAT IS OCCUPIED BY PEOPLE AS [illegible]	This is particularly true in living rooms or dens where the occupants are usually seated at rest. In halls and corridors, people are more active and are not so sensitive to air currents.
c. JET DEFLECTING TYPE REGISTERS, preferably of the adjustable type, that will control the direction of the air stream and which will reduce the air velocity rapidly.	From the standpoint of comfort heating, it makes little difference whether the registers are in the floor, low on the outside wall or in the ceiling, so long as the warm air discharges in the direction of cold exposed walls. [illegible]
d. A heavy cast [illegible]	There is no single register type or location that is superior to the exclusion of all others.
e. HIGH SIDEWALL REGISTERS are extensively used, and have many advantages as follows: 1. There is practically no danger of the [illegible] striking an occupant. 2. They do not interfere with furniture placement. 3. They are less subject to surface soiling. Adjustable two-way deflecting type registers, as shown in Table 11, are preferred. Registers are usually located with the bottom of the opening about 6 in. from the floor, and with the top of the opening not less than 1 ft. below the ceiling. Register sizes shown in Table 11 are industry standards.	With proper[illegible] Some are not, even when the unit is designed conscientiously. Sometimes, because operation that results in long off periods of the blower will not give satisfactory operation. In general, warm air registers should be located in outside walls so that the air discharges in the direction of cold exposed walls. Where the register is closer than 1 ft. to the ceiling, a single deflection adjustment set to secure 15 or 20 degrees of spread is sufficient. Where the register is in the center of a wall, two deflections should be set to secure 30 degrees of spread. Where the register is near a wall, deflect the stream away from the wall.
f. LOW SIDEWALL AND BASEBOARD REGISTERS usually [illegible]	Air that is discharged against the base of a stairway will travel up and [illegible] Air that is discharged near a front door will tend to overcome the cold air that enters the house from [illegible] when the door is opened. [illegible]
g. CEILING REGISTERS give results similar to that of high sidewall registers. They must be of a type that provides sideways deflection.	Deflect the air [illegible] Ceiling registers are better adapted to rooms having high ceilings.
h. FLOOR REGISTERS are satisfactory for installation under large glass [illegible]	Floor registers are ordinarily not preferred since they interfere with furniture placement and rugs and carpets. In old house construction, existing floor registers may often be retained, if construction limitations do not permit the use of new register locations.

3. Warm Air Registers in Old House Replacement Jobs

a. When it is not desirable or required to open the walls to install new forced air type registers, as outlined in Section 2, the existing baseboard registers may be used satisfactorily.	It is possible to obtain registers that have adjustable horizontal fins here that permit the deflection of air towards the floor. Usually these registers will fit into the existing register holes, and will be an improvement over the old type that had no deflecting fins.

Fig. A

Table 12.

RETURN-AIR DUCT SYSTEM

COMBINATIONS OF PARTS SELECTED AS STANDARD

Combination Number	Return-Air Intake Size, In.		Riser Size in Inches Where Stack is Used in Stud Space	Branch-Pipe Size, Inches		When Joist Lining is Used** Number of Joist Spaces Lined and Minimum Depth of Space Required	Required Increase in Width of Trunk Duct (For 8 in. depth of duct)
	Base-board	Floor *		Round	Rectangular		
1	2	3	4	5	6	7	8
B1	10 x 6"	6 x 10" or 4 x 14"	10 x 3¼"†	6"	4 x 8"	1 space of 3" depth	1 in.
B2	12 x 6"	6 x 10" or 4 x 14"	10 x 3¼"†	6"	4 x 8"	1 space of 3" depth	2 in.
B3	12 x 6"	6 x 12" or 5 x 14"	12 x 3¼"††	7"	5 x 8"	1 space of C depth	2 in.
B4	14 x 6"	6 x 14"	14 x 3¼"††	8"	6 x 8"	1 space of 3" depth	4 in.
B5	24 x 6" or 30 x 6"	6 x 30"	Two stacks 10 x 3¼"†	7"	5 x 8"	1 space of 3" depth or 2 spaces of 4" depth	4 in.
B6	30 x 6"	6 x 36"	Two stacks 12 x 3¼"††	10"	10 x 8"	1 space of 3" depth or 2 spaces of 4" depth	7 in.
B7	—	6 x 36"	—	12"	15 x 8"	1 space of 3" depth or 2 spaces of 6" depth	11 in.

NOTES:

* Use these sizes only when building construction or separation requires the use of floor intakes. The sizes listed correspond to standard sizes for gravity installations, except floor box covers. The size of standard blind boxes is not given.

** Based on 16 in. space between joists. Use full depth of joist, except when joist depth is less than minimum depth required, in which case a drop pan must be used. This may occur when two or more joists above are considered to the same joist space.

† If B is desired to use 14 in. x 3¼ in. stud space, it makes no difference whether this space has protruding keys or not.

†† If B is desired to use 14 in. x 3¼ in. stud space, the plaster keys must be smooth, without any protruding plaster keys to interfere with the flow of air.

Fig. H

The "How, What and Why" of the New Winter Air Conditioning Manual

BY
S. KONZO*

HOW TO USE IT
WHAT RESEARCH BACKS IT UP
WHY EVERYBODY SHOULD ADOPT IT

Registers — Locations, Types, Sizes

THE wide diversity in opinions as to proper register locations, the best types, and the proper sizes have been eliminated with the passage of time and as a result of research. The Manual now offers the basic rules and the best opinions of the entire industry. These rules and recommendations have been set down in simplest terms, and it will pay each and every heating contractor to study them carefully.

The few simple rules for determining register locations are shown in Fig. A. Please keep in mind that these rules did not spring up overnight, nor are they the product of just one engineer's thoughts on the subject. In simplest terms, the rules consist of the following recommendations:

1. Operate the blower almost continuously.
2. Avoid drafts.
3. Use adjustable 2-way deflecting registers (see Fig. B).
4. Counteract heat losses at their source.

During the course of the past few years, several developments have occurred in the heating industry that have affected the thinking of the engineers in the warm-air industry. In the post-war period we will undoubtedly see a greater emphasis on year-around air conditioning, and many companies will feature cooling equipment as an integral part of the home comfort-making device. Many engineers feel that the installations now being installed should not be so limited that the later usage of cooling equipment is not practical. These men feel that the only logical location of the registers is at the high sidewall location.

A second development that is undoubtedly influencing the industry has been the keen interest that has been shown in the panel type of heating system. One of the main advantages of this system has been the fact that the heating plant is not in evidence in the living quarters of the home and that, as a consequence, there are no limitations in the location of the furniture in the home. Many engineers feel that this point should not be overlooked and that wherever possible the warm air registers should be out of the way of the furniture. These two arguments have undoubtedly influenced many engineers and have caused them to favor the high sidewall location.

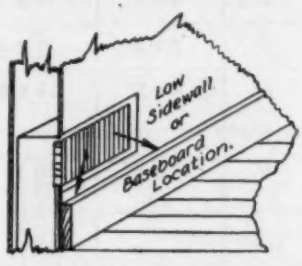
The use of low sidewall and baseboard registers has been losing ground, not because of their inferior performance, but primarily because of the two factors just mentioned. It is true that the baseboard and low sidewall locations spread the warm air in the lower part of the room and that they do in general provide from one to two degrees warmer temperatures near the floor than the high sidewall registers. On the other hand, there have been too many cases reported in which either the blower was operated as a booster fan or the registers were of the simplest grille types that did not provide for a deflection of the air. In these poorly installed jobs there have been frequent complaints due to drafts in front of the registers. There are locations in the house where the baseboard or low sidewall register will be admirably fitted to do the best job. On the other hand, one cannot escape the conclusion that it will be necessary to pay special attention to the following items:

1. Will the baseboard register get in the way of furniture?
2. Will the air stream strike an occupant at rest?

It has been our observation that those who are absolutely convinced that the baseboard location is the *only* location for a register are those whose experience falls within the following classes:

1. Those companies which have been extensively using two-speed blowers. Since the blower operates at low speed for a large portion of the heating season, the possibilities of obtaining drafts are much smaller than where a high-speed blower is used.
2. Those companies whose installations are in climates where the winters are quite severe. During prolonged cold spells the average register air tempera-

Fig. 10. Recommended Type of Baseboard and Low Sidewall Registers

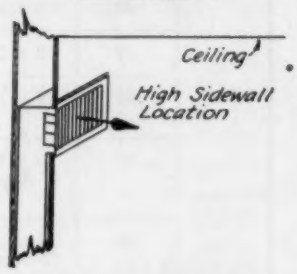


Vertical bars with adjustable deflection, or fixed vertical bars with deflections to right and left not exceeding about 22 degrees.

For low sidewall location, the deflection for horizontal, multiple valve, registers should not exceed 22 degrees.

For Baseboard locations, the deflection for horizontal, multiple valve, registers should not exceed about 10 degrees.

Fig. 11. Recommended Type of High Sidewall Registers



Horizontal valves, in back or in front, to give downward deflections not to exceed from 15 to 22 degrees.

(FOR DEFLECTION ANGLES EXCEEDING 22 DEGREES, NOTE CAREFULLY THE EQUIVALENT LENGTHS GIVEN IN TABLE 7.)

Fig. B

Special Research Professor, Engineering Experiment Station, University of Illinois.

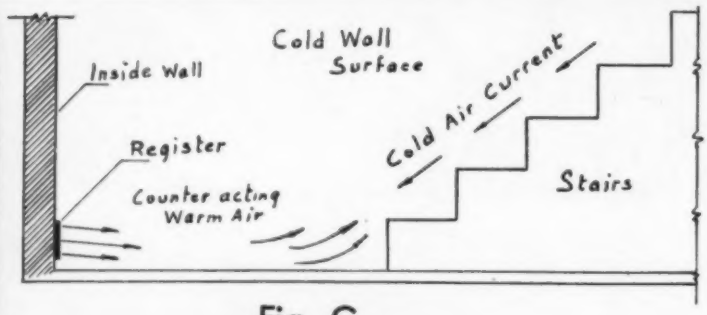


Fig. C

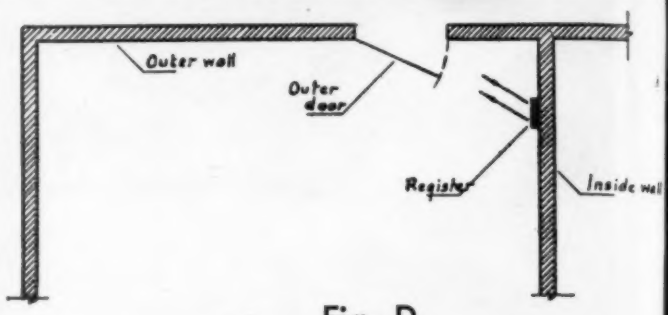


Fig. D

ture will be fairly high and the blower operates for long periods so that the possibilities of obtaining drafts will be smaller than in a milder climate where the register temperatures will be low for a large part of the season, and the blower operates intermittently.

3. Those companies which have consistently placed a large amount of attention on proper baseboard register location and who have, at the same time, always specified the use of two-way adjustable registers. As research tests have clearly indicated, it is possible to spread the air coming from a register both downwards and outwards so that the air stream velocity is "killed" within a few feet of the register. The velocity in front of a non-deflecting type register is several times higher than that in front of a deflecting type register.

Our observations have shown that there are several locations in a house where the low wall register will probably do a better job than a register in the high sidewall. One of the most common conditions met with in a house is the possibility of having drafts come rolling down the stairs, particularly where the stairs are located next to an exposed cold wall. One of the simplest means of breaking up this cool air stream is to counteract it with a rising current of warm air directed at the foot of the stairs (see Fig. C).

Another condition which frequently occurs in the field is a means of counteracting the cold air that rushes into the house when the outside doors are opened. A warm air register placed in the vestibule, or hall, or along the partition wall, which discharges a stream of warm air against the incoming cold stream, will largely counteract the drafts that arise either by the opening of the door or by cracks in the door frame (see Fig. D). This type of register will be most effective in those jobs where the doors are opened frequently, such as in churches and stores. The problem of excessive air motion in front of the registers is not of any consequence, since the occupants are not at rest, and the much colder air stream from the outside is a much more serious source of discomfort.

Many installers have also claimed that baseboard registers are ideal for the heating of basement rooms having bare concrete floors. In these cases the air is deflected downwards against the floor, with the result

Table 11

WARM AIR DUCT SYSTEM

COMBINATIONS OF PARTS SELECTED AS STANDARD

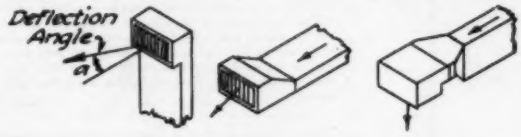
Combination Number	Stack Size Inches	Branch Pipe Size, Inches		Register Size, Inches (See diagrams below)				Required Increase of width of Trunk Duct (See Section G)
		Round	Rectangular	Baseboard or Low Sidewall	High Sidewall		*Floor Registers	
					For throws less than 13 feet	For throws more than 13 feet		
1	2	3	4	5	6	7	8	9
41	10 x 3¼"	6"	4 x 8"	10 x 6"	10 x 6"	10 x 4"	*8 x 10"	1 in.
42	10 x 3¼"	6"	4 x 8"	10 x 6"	10 x 6"	10 x 4"	*8 x 10"	2 in.
43	12 x 3¼"	7"	5 x 8"	12 x 6"	12 x 6"	12 x 4"	*9 x 12"	3 in.
44	14 x 3¼"	8"	6 x 8"	14 x 6"	14 x 6"	14 x 4"	*9 x 12" or longer	4 in.
45	10 x 3¼" (2-Stacks)	9"	8 x 8"	(2) 10 x 6" or (1) 24 x 6"	(2) 10 x 6" or (1) 24 x 6"	(2) 10 x 4" or (1) 24 x 4"	*10 x 12"	6 in.
46	12 x 3¼" (2-Stacks)	10"	10 x 8"	(2) 12 x 6" or (1) 30 x 6"	(2) 12 x 6" or (1) 30 x 6"	(2) 12 x 4" or (1) 30 x 4"	*12 x 14"	7 in.

* Use these items only when the building construction or capacity requirements necessitate the use of floor registers. The sizes listed for floor registers correspond to the standard sizes for gravity warm-air furnace systems, except for the sizes of the floor box collars. The use of standard blind boxes is suggested.

Fig. E

GROUP 7. Registers (Including losses in stackhead and velocity pressure)

TABLE 7.
Equivalent Length for Registers.
(See diagrams at right)



Deflection Angle a.	Baseboard or Low Sidewall Register	High Sidewall Register For throw of air of: less than 13 feet	High Sidewall Register For throw of air of: over 13 feet
0°	35 Eq. Ft.	35 Eq. Ft.	70 Eq. Ft.
15°	40 " "	40 " "	80 " "
22°	45 " "	45 " "	90 " "
30°	60 " "	60 " "	115 " "
45°	115 " "	115 " "	230 " "

Notes for Table 7.

a) When turning vanes are used in stackhead use 0.7 of values in columns 2 to 4.

b) Values shown in 2nd and 3rd columns in Table are for 6 in. height registers (Standard height). and those in 4th column are for 4 in. height registers.
For 5 in. height registers, multiply values in Col. 2 and 3 by 1.3
For 8 in. height registers, multiply values in Col. 2 and 3 by 0.8

c) For 2-way deflection registers, add the vertical and horizontal deflection angles together and multiply by 0.7. Select closest angle "a" in Col. 1 of Table 7.

Fig. F

that the warm air "washes" the floor and blankets it with a layer of warm air.

In the final analysis, there is no single location of the register that is always the best for the particular job. The salesman and the installer should study the rules and the explanations given in Fig. A, so that he will be able to cope with each and every installation.

Standard Sizes of Registers

Fig. E, which is reproduced from the Manual, is in many ways one of the most effective weapons that the Association has devised to reduce the costs of warm air installations without impairing their efficiency or their application. Columns 5 to 8 show the standard sizes of warm-air registers for winter air conditioning systems that have been selected by the entire industry in full cooperation with the research staff and the register manufacturers. In selecting these particular sizes full consideration was given to such items as:

a. Free area through face.
b. Register air velocity.
c. Projected air or "throw" of the air stream.
d. Resistance of the register to air flow.
e. Prevailing practice in industry.
f. Availability of sizes.

In most cases there will be no necessity for specifying sizes that are not listed as a standard. To do so, you will run the risk of having delayed shipments, increased costs, and non-recommended types. We cannot emphasize too strongly that initial cost of equipment can be reduced only if the entire industry will back up this movement to such an extent that the register manufacturers can afford to forget the necessary dies, storage space, and catalogue listings that would be required for each non-standard size. If every jobber and every dealer can also keep a smaller inventory of faster moving items, the consumer will also benefit by this movement.

We urge each and every segment of the industry to examine the standard sizes listed in Fig. E, and to adopt them wholeheartedly. Recent correspondence with the Pacific Coast Gas Association indicates that the gas industry on the west coast intends to adopt the sizes listed in the Manual as their standard.

Pressure Losses in Registers

As will be shown in a later article, one of the most important items in the selection of the combinations of branches, boots, stacks, stack heads, and register is the *equivalent* length of the fittings in each branch duct. The equivalent length is a unit which expresses the friction loss of a fitting in terms of the number of linear feet of a straight duct. For example, if a fitting has an equivalent length of 35 feet, that means that the friction loss of the fitting is the same as that imposed by 35 feet of straight duct.

In many of the design methods that have been used by industry in the past, the pressure losses in the register and stack head have been ignored. In the new design method given in the Manual the pressure losses are presented in a table, as shown in Fig. F. The values in the table summarize the results of extensive tests reported in the University of Illinois Engineering Experiment Station Bulletin Number 342. You will find by examining Fig. F that the following conclusions may be drawn:

(1) The equivalent lengths increase slowly for increases in deflection angles of from 0 to 22 deg. For deflection angles greater than 22 deg. the equivalent lengths increase at a tremendous rate. For example, when the air stream is deflected at a 45 deg. angle the equivalent length value is practically three times that for a 15 deg. deflection.

(2) The values shown in the second and third columns of the table are for 6-inch height registers. This height was selected in preference to the 5-inch height since the latter had a pressure loss approximately 30 per cent greater.

(3) The values shown in the fourth column of the table are for 4-inch height registers, which are neces-

4. Return Air Intake Locations

a. Intakes can be located either on inside or outside walls. Where large sources of cold air exist, the intakes are usually located near such sources. Intakes should be located so as to permit a simple, direct duct work. Air from a room should be removed from floor level. Hence, intakes should not be located above the baseboard.	When draperies extend down to the floor level, do not place the return intakes below the windows where the draperies will cover them when fully drawn. Place the intakes at either side of the window, or if permissible, in the floor below the window.
b. Return intakes are usually located in all rooms except bathrooms, closets, and lavatories.	In a two-story house where an open stairway goes up from the living room, it is advisable to place a return in each second story room of sufficient capacity to balance the warm air supply. If the stairs go up from an entrance hall, a substantial portion of the return air from the second story can be handled by a return intake in the lower hall. If floors on a given story are on different levels, one or more returns must be provided at the lowest level.
c. Locate and size the intakes so that an excessive amount of return air is not drawn across the living room floor.	It is permissible, and in most cases advisable, to make hallway return intakes handle more air than is required for the hallway heating requirements alone.

Fig. G

sary to give the throw of air required for rooms over 13 feet wide. It may be noted that in order to obtain this longer throw of air, it was necessary to use a small register, and that as a consequence, considerable sacrifice in equivalent length was necessary. These large magnitudes of equivalent lengths cannot be ignored in the design of the duct system.

(4) The use of turning vanes in the stackhead will materially reduce the pressure loss, as may be observed from note (a) in Fig. F. This type of register is recommended for systems in which the pressure loss of the fittings is large.

(5) The method of determining the equivalent lengths of two-way deflection registers is given in note (c). For example, if a given register has a 15 deg. downward angle and 15 deg. sideways deflection angle, the sum of the two deflections is 30 deg. Multiplying 30 by 0.7 gives 21 deg. Hence, the equivalent lengths for this two-way deflection register can be obtained by referring to the values given for 22 deg., which is the closest angle to 21 deg. that is shown.

Intake Locations and Sizes

The rules for determining the locations of return air intakes are summarized in Fig. G. The combinations of parts of the return-air duct system that have been selected as standards by industry, are shown in Fig. H (page 92). It may be noted that five sizes of baseboard intakes and six sizes of floor intakes have been selected from the dozens of sizes that have been commonly available.

The register industry has contributed greatly to this program of standardized sizes of equipment. Several companies have announced that their future production will be largely centered around the sizes shown in the Manual of the National Warm Air Heating and Air Conditioning Association. You will find it to your interest to conform to this program. The industry can do much in the way of reducing waste and lowering installation costs by standardizing practice as determined by the outstanding engineers who have contributed to this program.

Poor Bonnets Cause Uneven Temperatures

QUITE frequently the contractor checking complaints of high fuel bills finds there are rooms hard to heat, so the owner, in trying to heat these rooms, pushes his combustion beyond reasonable limits. This causes waste of fuel.

The first thing usually done is to adjust dampers in the various leader pipes to throw more warm air to the underheated room. Oftentimes this does not solve the problem. If so, do this—take a thermometer and read temperatures around the bonnet to see if the room which is underheated is being supplied by colder air than that flowing to other leader pipes.

This is a frequent characteristic of poor bonnet construction. The accompanying diagrams show the University of Illinois Engineering Experiment Station studies on several types of bonnets for both gravity and forced air plants.

If the bonnet check shows large temperature differences it may be

(*Continued on page* 140)

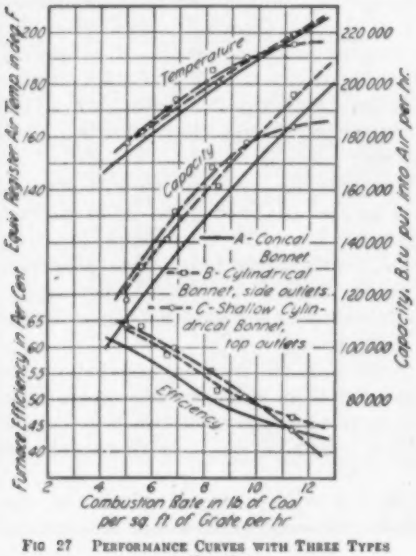

Temperature
Capacity
Efficiency
A-Conical Bonnet
B-Cylindrical Bonnet, side outlets
C-Shallow Cylindrical Bonnet, top outlets
Furnace Efficiency in Per Cent
Equiv Register Air Temp in deg F
Capacity, B t u put into Air per hr
Combustion Rate in lb of Coal per sq ft of Grate per hr

Fig. 27 Performance Curves with Three Types of Bonnets

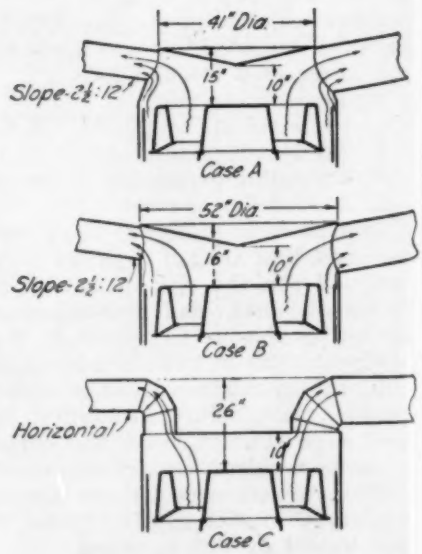


Fig. 26. Three Types of Bonnets Tested

Heating and Cooling Tomorrow's Homes *with Gas Fuel*

By H. P. Morehouse
Vice Chairman, Sub-Committee on Housing, American Gas Ass'n

FLEXIBILITY and economy are outstanding advantages of gas fuel for heating and cooling tomorrow's homes. The units can be installed almost anywhere in the house.

Gas heating equipment may be placed in a closet, in the attic, suspended under the floor or even in a partition.

Also, where there is a basement, there are many advantages in using gas as the fuel for a conventional warm air furnace or for a winter air conditioner.

One-Story House Without Basement

The numbers in the following descriptions of warm air gas heating equipment correspond with the numbered installations shown in Figure 1. There are at least seven possible out-of-the-way, space-saving locations in the one-story house without basement.

(1) Attic Unit—A horizontal forced-warm-air unit to rest on the attic floor or joists. The heat is distributed downward into a plenum chamber formed in the top of a central hall closet; the warm air, thence, is distributed to the rooms, either through registers in the plenum or through a duct system to each room.

(2) Closet Unit, Hi-Boy Model—A narrow vertical unit with outside dimensions 19x28 inches takes up a minimum of floor space. Can be installed successfully in a small closet.

(3) Closet Unit Lo-Boy Model—A new Lo-Boy type designed to fit into the bottom of a small closet, leaving usable space above. Warm air is delivered downward through registers at the baseboard, a fact which helps to solve the problem of cold floors in the basementless house located in cold climates.

(4) Partition Unit—A new, thin, narrow unit for installation within a partition—promised for the post-war period by one manufacturer. Separate units will supply heat to each room, with individual room control.

(5) Utility Room or Kitchen Unit—The conventional compact unit designed to furnish heat, through a central duct system. Lilliputian units of this design will be available after the war. Furnace dimensions are small because manufacturers have utilized unusual heat transfer surfaces.

(6) Floor Furnace—This is a descendant of the pipeless furnace. Since a floor grille is used, no floor space above ground is required for the unit. A shallow pit or a small sub-cellar is needed where floor is not high enough above the ground to allow sufficient space to install the unit. It can be serviced through a trap door in the floor or access may be planned through a suitable tunnel. Such units have been used extensively for many years in the South, Southwest and on the West Coast. They are finding more extended use in other mild climates as they become better known.

(7) Under-Floor Unit—The Attic Unit, mentioned in Example 1, can also be suspended from the joists under the first floor and be connected to a duct system supplying warm air to all rooms above.

In the installation of all of these units it must be kept in mind that accessibility for service is very important and the local gas company should be consulted on equipment location.

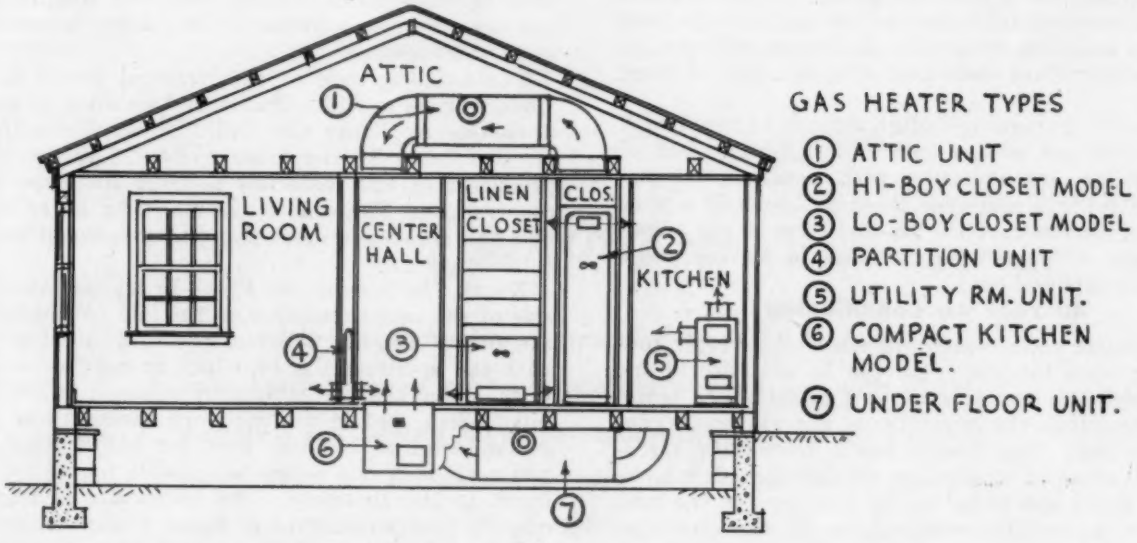


Fig. 1 Types of gas heaters for the one-story house without basement.

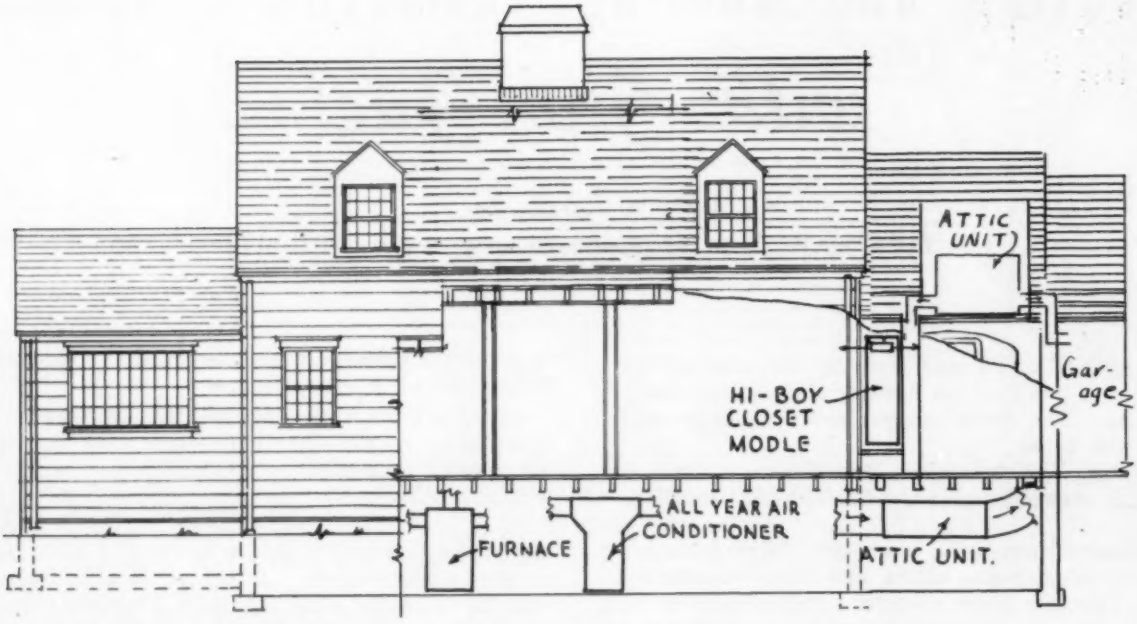


Fig. 2 Gas heat in the two-story rambling type house. Note flexibility of equipment and all-year air conditioner.

One-Story House With Basement

Basement Unit—In addition to the installations described for the one story house without basement, there is the conventional warm air furnace and winter air conditioner. Units of this kind are manufactured by dozens of manufacturers.

Two-Story Rambling House

The great majority of two-story houses can be heated satisfactorily and economically by means of a single winter air conditioner or gravity warm air unit using gas fuel.

The rambling type house often presents some knotty heating problems that may be solved by the use of more than one gas heating unit placed in different parts of the basement. A wing may be heated by an attic type unit shown in Figure 2. This unit may be located either under the floor or in the attic of the wing. A closet model hi-boy or low-boy may be used in such a building extension. It is also practical to use a vented cabinet space heater to take care of these locations.

Rooms over garages are often difficult to reach with ducts and do not always heat satisfactorily. One of the foregoing arrangements with separate thermostatic control will overcome these problems in a very satisfactory manner. Thus the fuel form of gas allows the system designer wide latitudes in solving some knotty heating problems.

All Year Air Conditioning

Many better class homes will want *all year* air conditioning after the war. Gas will be available in one coordinated unit complete under a jacket which is not much larger than the conventional gas winter air conditioning unit. This system heats, humidifies, circulates and filters in winter and refrigerates, dehumidifies, circulates and filters in the summer. In the mild seasons it can ventilate with outside air. Its operation is at the control of the home owner by two small toggle switches mounted on the thermostat.

Like gas heating equipment, there are many locations in the home where all year gas air conditioning equipment can be placed because of the ideal fuel form of gas. Sheet metal contractors will want to capitalize on the unusual public appeal offered by this system.

Venting Gas Equipment

All automatic gas appliances must be installed with effective vents for removing the products of combustion. In laying out these connections there are three general points to consider.

No. 1. *The Type of Vent*—Figure 1 shows seven different ways of heating a one-story, basementless house and all of these require a draft hood, a vent connection and a flue.

There are two types of flues which can be used, although choice may be limited by local regulations requiring Type A standard tile-lined masonry chimneys of conventional design. Type B flue, designed for use with gas appliances only, may generally be used to advantage.

The building code of the National Board of Fire Underwriters provides that such flues must be marked "For Gas Appliance Use Only." Several manufacturers are listed by the Underwriters' Laboratories as producers of flue materials suitable for Type B flue construction. These flues are markedly lower in first cost and simpler to erect than a conventional masonry chimney.

No. 2. *The Size of the Flue*—In no case should the size of the vent connection on the flue be smaller than the size of the flue collar of the draft hood provided with the appliance. A four-inch round flue would be suitable for heating equipment of about 35,000 B.t.u. input when used in the one-story basementless house. A five-inch flue would be good for 55,000 B.t.u. input and a six-inch flue would be suitable for 90,000 B.t.u. input to the appliance. The latter size is most frequently used in the type of house under discussion.

Figure 3 illustrates the installation of a Type B flue connected to a gas heating unit. Note the clear-

ance between the partition wall and the flue which must not be less than one inch. Inclined attic cross-overs should be kept at angles greater than 30 degrees above the horizontal (45 degrees if possible). The obvious saving in cost made possible by the use of Type B flues in gas heating is clearly indicated in the simple construction shown in Figure 3.

The low flue temperatures produced by gas appliances reduce fire hazards from flues and permits the use of this construction. The low surface temperature of gas heating units also permits less clearance (6 inches side and rear), thus allowing unusual location and resultant space economy and operating convenience.

The vent connection from an appliance to a flue should be as short as possible and should pitch up toward the flue not less than one-quarter inch per foot. It may be made out of Type B material or it may be made of corrosion resistant metal flue pipe.

If the one-story house has a basement, conventional gas boiler or furnaces, or a complete winter and summer air conditioning unit, may be set on the basement floor. If there is any possibility that other fuels than gas might be used at some future date, or that a gas incinerator might be installed, then a masonry chimney would be required. Otherwise, these units as well as the types previously mentioned may be connected to a Type B flue.

No. 3. *Requirements of the Individual Appliance*—Referring again to Figure 1, it will be seen that the attic unit would require a flue only a few feet long through the roof and at least two feet above the ridge. There is no reason to carry such a flue down through the entire house as would be the case if a masonry chimney were installed. Units 2 and 3, the hi-boys and lo-boys, would require an oval pipe for the vertical run through the partition and then an attic cross-over kept at least 30 degrees above the horizontal and running far enough so that the chimney extension through the roof can be two feet clear of the ridge without requiring an extensive exterior flue run which would cool the flue excessively.

The same general requirements apply to the units 4 and 5. The temptation to erect a flue straight up from unit 5 through the roof of the utility room to the out-of-doors should be avoided, since this would call for too long a run of vertically exposed Type B flue.

If the utility room also includes other automatic gas appliances requiring flues such as a water heater, then consideration might be given to the interconnection of gas appliances to a single flue. This is permissible if the capacity is adequate for the two applances. Units 6 and 7 require a flue running right down below the floor of the house so that means for the support of such a flue should be included in the plans.

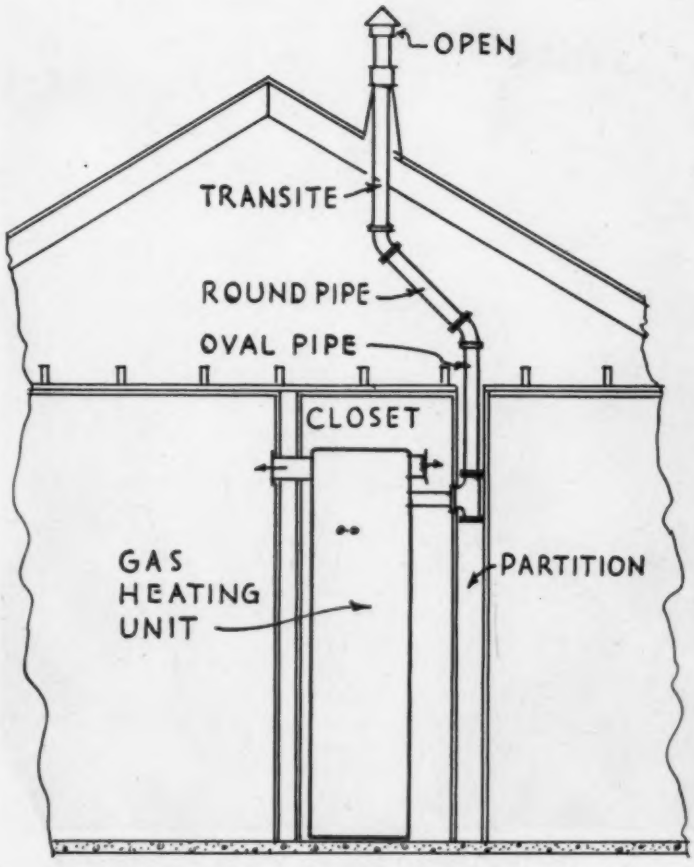
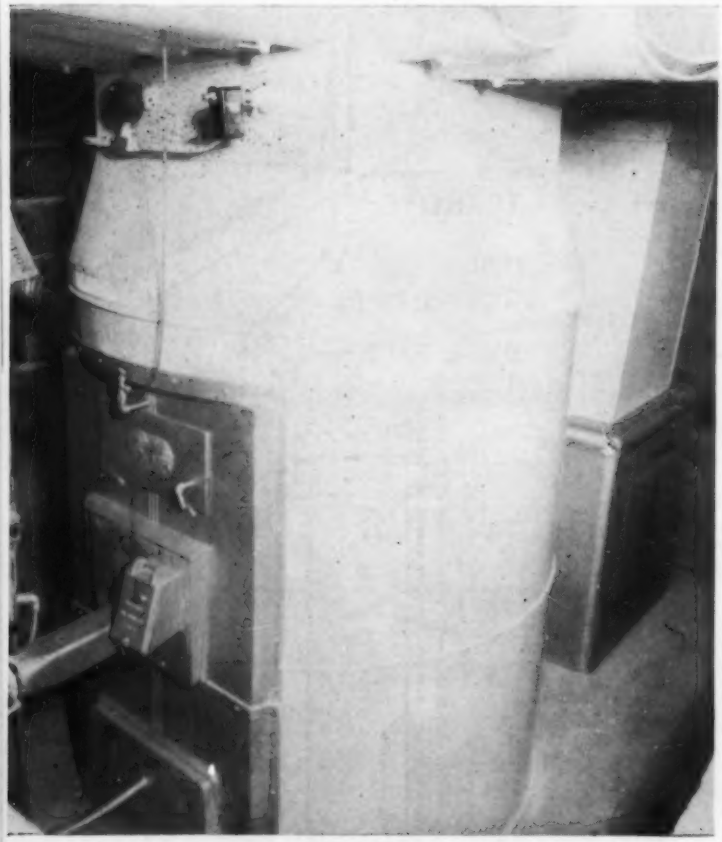


Fig. 3 Type B-Flue for gas heating appliances.

Since houses are conventionally equipped with chimneys, the appearance of this feature is usually considered desirable and can readily be provided by the use of a false metal chimney which can be stucco coated if desired. This simulated chimney is fastened to the roof, surrounding the outlet of the Type B vent. This adds to the attractiveness of the installation.

Coming —

This article on gas heating is one of three. The two articles to follow will describe post war heating with oil and with stokers including the newest ideas on equipment and installation and suggestions for obtaining the type of fully automatic heating and air conditioning the public so confidently anticipates.



The "big" market post-war will be modernization—with a good gravity furnace the addition of a packaged blower and a firing device, gives the owner winter air conditioning at nominal cost.

Packaged Blowers Offer Many Sales Possibilities

By Marion I. Levy
President, Viking Air Conditioning Corp.

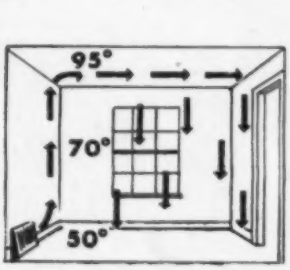
HAVE you ever given serious consideration to this point of selling—perhaps if I *knew more* about my products, I'd *sell more?* Have you ever realized that *all* customers aren't interested in the same few features of a product?

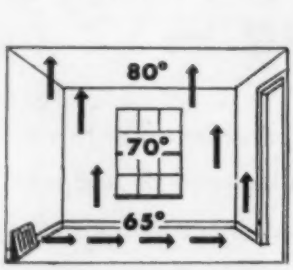
To elaborate on this point, take customer X who is in the market to buy a warm air furnace blower. Mr. X isn't impressed by the low cost of a blower unit, because he can easily afford to spend ten times more than it actually costs. Therefore, he is probably mainly interested in the *comfort* it will offer him, and not necessarily the initial low cost or fuel saving. On the other hand, Mr. Y can't afford to spend too much, so he's interested in comfort, but equally important, will the addition be too costly for him? Then there is Mr. Z. who includes still another point with comfort and cost. He lives in a particularly soot-laden district and wants to know if *filtered air* will keep the interior of his house cleaner.

There you have, in a rough sketch, a diversification of needs for every potential customer. Therefore, are you equipped with the knowledge of your products (in this case blowers) to sell Mr. X, Mr. Y and Mr. Z? Can you tell each one of them *more* than, "Yes, a blower is worthwhile."

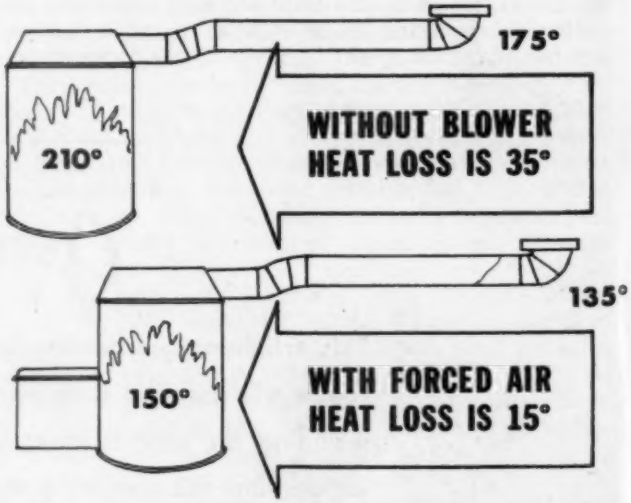
Let's apply the above question, regarding blowers, specifically to warm air furnace dealers and sheet metal contractors. Statistics show that the post-war market for blower-filter unit sales will be tremendous. For you, it means simply that when you walk down Elm Avenue the people inside one out of every few of those homes will want—and can be sold—blowers.

Some dealers sell a lot of blowers, and will continue to do so because they *know* the advantages of them. Many find it extremely profitable business. But too many dealers and contractors consider blowers a sideline, and haven't bothered to brush up on

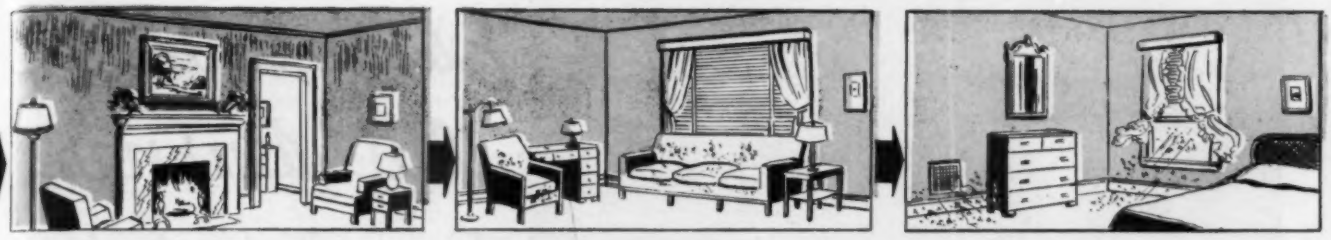




Gravity heat delivery results in stratification—cold floors and hot ceilings. Addition of a packaged blower brings warmer floors, cooler ceilings, uniform temperatures from room to room.



Slow air flow in a gravity system results in high heat loss from basement piping. A blower speeds up air flow and reduces this loss.



Dirt is one problem every housewife understands. The blower package, by means of filters, eliminates streaked walls, picks up infiltering dirt and catches it at the filter. This means easier housekeeping — a powerful sales point.

the "why" selling points. The reason can be: they find themselves loaded down with a hundred and one products, and don't have the time to thoroughly understand each one. Why, then, you ask, should a dealer take time to learn about and "push" blowers? Well, because there's a nice thick profit to be had in blower sales. Also, because blower installations require little service, and the customer satisfaction that goes with a blower installation means added prestige and good will for the contractor.

Supposing, if you already handle blowers or plan to do so, you take this little "test" before continuing: List what you consider to be the selling features of blowers on a piece of paper. Then when you finish this article, compare what you've read with what you've written. If all the points are noted, you are probably already a successful blower salesman! If, on the other hand, the results were poor, why not reread, study and profit from what you can learn about blowers!

Before continuing, let's clear up one point. The comparisons to follow between a gravity and a forced air system are not meant as a knock to the gravity system, for gravity furnace manufacturers and contractors may well be proud of the heating service their units have rendered. Up to a certain point a well-planned and properly installed gravity job always has been and still is a satisfactory heating system. But a forced air system has many advantages which appeal to owners. One powerful appeal is the "personal satisfaction" angle. True, he's interested when you tell him that the blower he should buy is neat looking, sturdily built, silent and engineered correctly. However, you don't really hit home until you tell him what *personal benefits* he will get from using a blower. That's what he wants to know. Buyers (whether they realize it or not) purchase an item because it will make their tasks easier, give them benefits they didn't enjoy before, taste good and improve their appearance or health. In short, for some reason that will help *them.*

So let's see what advantages there are for the potential customer if he installs a blower in his house.

Forced air heating, with all its other assets, is mainly for the purpose of giving even, comfortable and dependable heat in *all* the rooms, *all* the time. And a man buys a blower primarily because some of his rooms are overheated or underheated, and he wants to enjoy the blower benefits by having comfortable heat distributed evenly throughout the rooms of his house. Since a blower does this job, and does this properly, it becomes the easiest of all warm air products to sell.

It is a matter of record that many houses built in the first twenty years of this century are inefficiently heated. This may have been due to a lack of engineering knowledge of heating when the house was built, or perhaps the lack of knowledge of piping resistance by the particular installer. The results are overheated and underheated rooms or portions of the house. The gravity system cannot force enough warm air through small pipes or around bends and elbows in the pipes, to adequately heat the rooms it serves. Conversely, some rooms fed by oversized and short-run pipes become overheated.

This is where the blower with a minimum of revisions in the piping can do a very efficient job of warming cold rooms and evening-off the temperature in hot rooms, because the warm air is *forced* through these tough pipes.

Because warm air rises, a room on a gravity system fed by a properly sized pipe can *still* be uncomfortable because of air stratification—the ceiling of the room may be 95 degrees (wasted heat); the breathing line temperature is a comfortable 70 degrees but the floor can be anything down to 50 degrees (cold and unpleasant). Circulation is the reason why a blower eliminates this. The warm air is forced into a room, and billowed evenly to every section of it. This means that no part of the room is either hot or cold—but just right. To put this in figures, the properly designed forced air system temperature at the ceiling is 80 degrees (15 less than with gravity), 70 degrees at the breathing line (the same as gravity) and 65 degrees at floor level (15 needed degrees warmer than with gravity!)

These are the selling points and *proof* that a blower can correct and improve an unsatisfactorily warm air heated home.

Personal example is another strong selling point. The potential customer is not as impressed when you tell him that forced air heating cuts bills down by 25 per cent as he is when you cite examples: "John Jones around the corner converted from gravity to forced air winter conditioning and saved $53.80 in

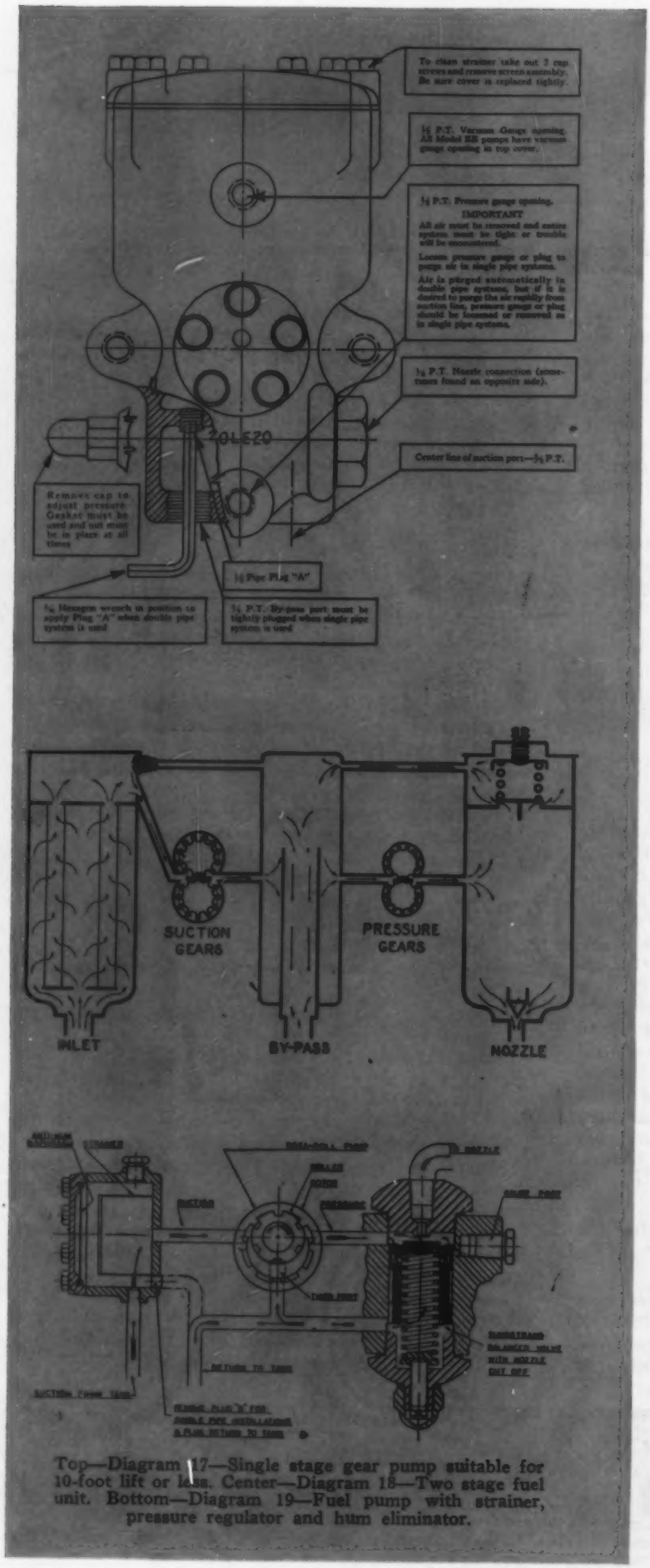
(*Continued on page* 148)

Cold rooms, hot furnaces, overheated rooms, cracked firepots, burned out grates and high fuel bills are all results of too little air circulation through the heating system. A packaged blower is the quickest remedy for these troubles.

Essentials of Oil Burner Service—Part V

Types of fuel pumps—Anti-hum pumps—Causes of pump failures—Causes of pump noise—In-field remedies

By E. F. Fuller,
E. F. Fuller Engineering Co.


To clean strainer take out 2 cap screws and remove screen assembly. Be sure cover is replaced tightly.
¼ P.T. Vacuum Gauge opening. All Model EB pumps have vacuum gauge opening in top cover.
¼ P.T. Pressure gauge opening.
IMPORTANT
All air must be removed and entire system must be tight or trouble will be encountered.
Loosen pressure gauge or plug to purge air in single pipe systems.
Air is purged automatically in double pipe systems, but if it is desired to purge the air rapidly from suction line, pressure gauge or plug should be loosened or removed as in single pipe systems.
¼ P.T. Nozzle connection (sometimes found on opposite side).
20LE20
Center line of suction port—⅜ P.T.
Remove cap to adjust pressure. Gasket must be used and nut must be in place at all times
¼ Pipe Plug "A"
⅛ Hexagon wrench in position to apply Plug "A" when double pipe system is used
¼ P.T. By-pass port must be tightly plugged when single pipe system is used
SUCTION GEARS
PRESSURE GEARS
INLET
BY-PASS
NOZZLE

Top—Diagram 17—Single stage gear pump suitable for 10-foot lift or less. Center—Diagram 18—Two stage fuel unit. Bottom—Diagram 19—Fuel pump with strainer, pressure regulator and hum eliminator.

IN THE gun type high pressure atomization oil burner, the fuel oil pump performs two functions:

1—It pumps the oil from the oil storage tank to the burner through the suction line.

2—It builds up pressure to deliver the oil through the atomizer jet, or nozzle by way of the pressure line.

Earlier makes of oil burners attached the fuel oil strainer, pump, and regulator valve to the burner separately and piped them together in a complicated and clumsy manner. Diagram 16 shows one of the earlier models of an oil burner pump.

Modern pump assemblies consist of a fuel unit, combining filter, pump, pressure regulator and a certain unit also incorporates an anti-hum attachment built into the fuel assembly. The entire unit can be removed, checked, cleaned, repaired, or replaced in a few minutes by the service man.

Fuel oil pumps are usually made for domestic oil burners to operate at 100 pounds per square inch pressure at the nozzle, 1800 revolutions per minute, and not over 12 gallons per hour pumping capacity.

In the repair or replacement of fuel oil pumps, one must observe the following:

1—Make and model of pump.

2—Size and capacity of pump.

3—Rotation (clockwise or counter clockwise, determined by facing the shaft end of pump.)

4—The type of mounting. (a) Standard ring type. (b) Foot type. (c) Side Flanged Port.

5—Ports are: (1) Supply. (2) Discharge. (3) Return. (4) Nozzle.

Connections, etc., must be specified to be on the left or right side, determined by facing the shaft side.

Modern pumps are classified as single stage, or two stage pumps. The single stage having one pump assembly and the two stage containing two pump assemblies, one for suction and the other to build up pressure for atomization at the jet tip.

Diagram 17 shows a single stage gear pump, which is recommended as standard by some manufacturers of oil burners for a gravity feed oil storage installation. In such a system the operation of this pump is quiet and satisfactory, however it becomes troublesome to purge the air out of the system in case of an empty tank call. The manufacturer recommends this pump for not over 10 inches of mercury vacuum or greater than a ten-foot lift. Higher suction tends to cause vaporization, which generally will result in a noise that is difficult to distinguish from air entering the suction side of the pump.

This fuel pump is built to such exceedingly close limits on all working parts, that there is always a danger of getting minute particles of foreign matter into the pumping element; therefore, only the strainer and pressure regulating valve may be serviced in the field. Due to the close tolerances of the gears, this pump under heavy duty becomes noisy and troublesome. It is not recommended for the high lift and difficult performance required by a two-pipe underground storage system.

Two-stage Pumps

Diagram 18 shows a two stage fuel unit, consisting of a strainer, suction gears, by-pass chamber, pressure gears, and pressure chamber. Installed in a two-pipe system, the oil is drawn through the strainer by suction gears, and passes into the by-pass chamber. The pressure gears build up the necessary pressure in the valve chamber to operate the nozzle valve and the excess oil returns to the by-pass chamber through the regulating valve. All excess oil is by-passed back to the tank through the return line. This pump is self priming and self venting. Any air that may be taken into the by-pass chamber, follows the line of least resistance and passes back to the tank by way of the by-pass.

Although the two stage pump is more expensive than a single stage pump, it eliminates troublesome venting in starting the burner after a no oil call and over a period of years it will save enough time and money in service charges to pay for the difference in the initial cost many times over. A complete servicing or the renewal of parts is a matter of only a few minutes work, and is accomplished by removing cap screws at top of the strainer chamber, removing and cleaning strainer, and returning same to position. The

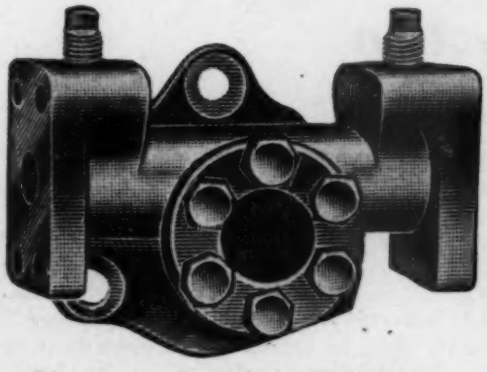


Diagram 16—An early model fuel pump.

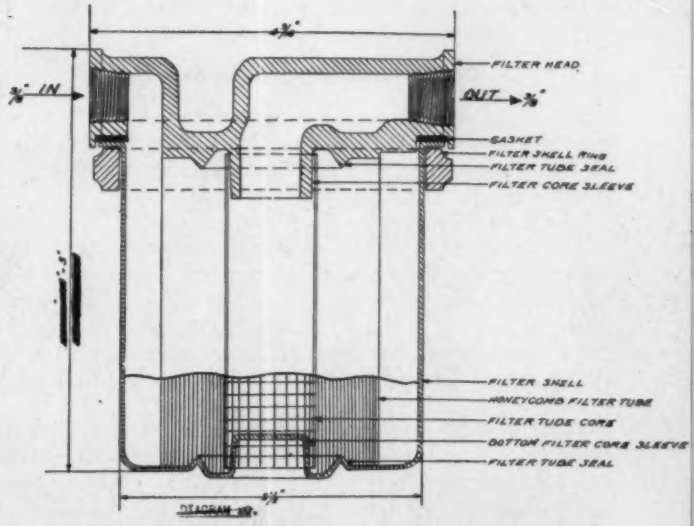


Diagram 20—War time fuels suggest the use of an extra cartridge filter in the suction line to remove sulphur, carbon, etc.

pressure valve mechanism is removed by unscrewing cap screws and nut at bottom of opposite chamber, removing and cleaning, or renewing valve mechanism. By unscrewing the seal nut, the shaft assembly and seal parts are removable and can be cleaned or replaced by tightening lock nut and adjusting diaphragm until it is dished about 1/64th of an inch. This pump is recommended for heavy duty, high lift, rugged wear and trouble free operation at all times. It is particularly valuable for underground fuel storage systems.

"Anti-hum" Pumps

Diagram 19 is another type of fuel unit, which in addition to strainer, pump, and pressure regulating assembly, incorporates a tank-hum eliminator in its construction. The anti-hum diaphragm prevents basement tank hum in single pipe installations, by means of a double diaphragm, resistant to all oils, being securely located in the cover of the unit, which confines a cushion of air under slight pressure between the cover and the diaphragm. Vibrations set up in the suction line which cause a hum, are prevented or removed by the drum head action of this diaphragm.

This unit also incorporates the principle of the rotaroll pump, which permits the pump to pull a high vacuum while delivering oil to the fuel jet with exceptionally quiet operation. Quiet operation under maximum load is accomplished by a roller which revolves in positive contact with a rotor or ring, the contact point being a rolling seal between the two pumping members. This contact point is at the outlet port of the pump, which forces the oil carried in the tooth spaces through the outlet port. This single stage pump has the operating characteristics of a two stage pump. It will operate at from 20 to 25 inches of vacuum and deliver a pressure of 75 to 150 pounds without "squawking" or pressure fluctuations on high lift service. This unusual performance is obtained by the addition of a third compensating port in addition to the conventional inlet and outlet ports. This third port provides additional oil which completely fills the spaces in the pumping members and makes the pump operate smoothly and quietly under heavy load. All moving parts are easily accessible. Removing the cover exposes the strainer. In the same chamber

is the pumping assembly, and the removable hex nut permits easy inspection of the valve seat.

Pump Failure to Deliver Oil

X—If burner motor is in operation, but flame does not appear, check to see if oil is being delivered by throwing a lighted piece of paper into the fire box. If oil does not ignite:

1—Clean nozzle tip.

2—If the oil is stored in an underground tank, the bottom should be inclined downward, away from the bottom of the suction line tip, to form a sump for sediment, and condensation. Pump out several gallons from the low end of tank, place in a glass container and examine for water and sediment. Continue pumping until oil flows clear.

3—If the bottom of the tank is below the level of the fuel pump, a foot valve should be installed on the dip pipe of the suction line, about two inches above the bottom of the tank, to hold the oil in suspension during the off period of the burner. Check to see that this valve is installed.

4—If an anti-syphon valve is used, it should be installed just inside the basement wall. Check position of this valve.

5—Check to make sure rotation of motor coincides with rotation of pump. If not, change pumps to correspond with motor.

6—In pumps that are adaptable to both single and two pipe lines, check by manufacturers' bulletin to make sure that the correct orifice in pump has been properly plugged. (See Diagram 17.)

7—Check to see if system is air bound by loosening connection in line, or plug in pump and bleed the air from the unit according to manufacturers' bulletin.

Poor nozzle cut off may be caused by:

1—Air in line—purge.

2—Air pocket between cut off valve and nozzle tip. Normally this would work out by continued operation of burner.

3—Valve seat on pressure gage may be clogged or damaged. If clogged, clean; if damaged, renew.

4—Syphon in pressure valve may be damaged. If so, renew.

Overload on Motor

When motor control contacts become heated, it is an indication of an overload on the motor. This may be caused by:

1—Sticking or freezing of pump shaft. Remove, clean, examine, and renew if necessary.

2—Clogged strainer. Remove, clean, and reassemble.

3—If pump action is stiff due to close tolerances between moving parts, after cleaning, continue operation of burner for several hours and pumping members will probably wear in.

If this is not accomplished, return pump to factory for further repairs.

Noisy Pump

1—Check coupling and correct if not in line.

2—Tighten coupling connections if found loose.

3—Align pump on burner frame if out of alignment.

4—Check for leaks in suction line. Seal the leaks.

5—Open clean out, remove dirt and grime from valve seats and replace check or flapper. Add a good grade of oil pipe dope to male member of all bolts and valve caps.

6—Check and seal all leaks in strainer gasket, if any, and tighten plugs and fittings on pump.

7—If leaks are obvious but cannot be detected in the suction line, disconnect line from pump, cap all openings, install pressure gage in line, fill tank with oil and apply five pounds air pressure. If pressure shows a tendency to drop in 30 minutes, locate point of leakage by applying soap bubbles to all joints and fittings with a small brush. Seal all leaks and start burner. The shorter the suction line between fuel oil tank and burner, the less the possibility of future trouble.

8—At times a high lift may cause a vacuum noise. The sound of a high vacuum is difficult to distinguish from an air leak. If no leaks are found, and sound seems to be caused by vacuum, install a vacuum gage at critical points along the suction line, until a point beyond the restriction has been reached. At this point the gage will immediately show a considerable drop. The trouble may be caused by:

1—A restricted orifice in fittings, check valve, anti-syphon valve, anti-hum valve, globe valve, kinked piping, or other restriction. Correct trouble when found.

2—The strainer screen may be clogged. The strainer area may be too small, or the mesh too fine.

3—The lift may be too high. If lift is too great, install a new and higher powered pump.

As long as the suction and pressure lines are free from leaks and stoppages, and moving parts of the pump are kept clean and in good adjustment, the fuel pump will not be overworked, and should give many years of trouble free service.

In addition to all of the super care that is necessary in the maintenance of oil burner operation, with extra carbon, extra sulphur, and cat oil, of the present day, we strongly recommend the installation of an additional cartridge filter in the suction line as shown in Diagram 20.

1945 Construction

NEW construction activity in the United States during June, 1945, amounted to $403,000,000, a four per cent increase over May and a 19 per cent increase over the $340,000,000 level of June, 1944.

The volume of new construction for the first half of 1945 was $2,049,000,000. It is expected that construction activity for the entire year will amount to $4,400,000,000, or 12 per cent more than that for 1944.

Estimates of 1945 construction, broken down into major categories, follow:

In June, privately-financed construction totaled nearly half of total construction as compared with 40 per cent privately-financed construction in June, 1944. Privately-financed factory building accounted for $51,000,000 of total June, 1945, construction, or two and one-half times more than the volume of construction in this category in June, 1944. Non-industrial military and Government-financed industrial construction ($60,000,000 and $73,000,000 respectively in June, 1945) is expected to decline sharply during the remainder of 1945, as military requirements in the construction field continue to decline.

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Restoration In Lead Of a Dome and Cupola

View of completed dome showing excellent appearance of the new lead ribs, also reconstructed lantern totally roofed with lead.

As the sheet metal industry converts from production for war to the normal business of peacetime, the repair of structures which have been neglected because of wartime material and manpower shortages once again assumes an important place in the industry's program for postwar activity. One of the first large and interesting repair contracts has just been completed on the Pennsylvania State Capitol building at Harrisburg.

General view of Pennsylvania State Capitol Building with scaffolding in place for dome reconstruction.

Under the supervision of Architect William Gehron; secretary C. M. Woolworth and chief engineer A. Judson Warlow of the Department of Properties and Supplies; general contractor McClosky & Co. of Philadelphia and sheet metal contractor J. Edward Linck Sheet Metal Works of Philadelphia executed a soft lead reconstruction contract.

The structure of this dome is expressed on the exterior by sixteen heavy vertical ribs. As originally built these ribs and the lantern above were of terra cotta. After many years of exposure to severe climatic conditions this material showed signs of weakening so it became necessary to replace it or to substitute another more weather resistant material.

The application of the lead is typical of proper installation practice for sheet lead work. The material used is soft lead sheet in weights of 6 and 8 lbs. per sq. ft. Since soft lead is relatively low in strength it is essential that the individual pieces be well secured at short intervals in a manner which will allow freedom for the natural thermal expansion and contraction. This is accomplished by providing a built up wood core for each rib to which the lead sheets, in relatively short pieces, are fastened by means of metal cleats.

Rib Covering

The profile of the rib, designed for suitability to sheet lead construction, is slightly different from the original masonry rib. Each rib tapers from bottom

Steps in Covering a Rib—Begin at Bottom

are joined by a lock seam lengthwise of the rib. The construction to this point is clearly shown in the photographs.

The manner of finishing the rib is shown in the drawing. The center pans are applied as before in 24-inch lengths, each one supported by a long cleat hooked into the turned back upper end of each pan. The sides of the pan are flanged in and held in place by the other end of the same cleat that holds the moulded section. Finally a cap course is applied, again in 24-inch lengths fastened at the upper ends as before and lock seamed over the flanges of the pan and moulding. The entire operation is identical on both sides of each rib.

Of particular interest is the rake miter where the rib moulding joins the horizontal moulding at the base of the lantern. Here the malleable nature of the lead enabled the lead moulding on the sloping rib to be dressed to a right angle to extend approximately 4 inches along the horizontal moulding. The preformed horizontal moulding was then coped to the miter forming a weatherproof lap joint.

Dome Base Coping

In addition to the ribs and the lantern roof, there are two new coping-flashing courses of lead at the base of the dome. The lower course covers the existing cornice and extends back under a new cut stone moulding to form a through wall flashing. It is of two courses loose locked together and the lower edge is hemmed back over a continuous cleat fastened to the stone. The upper coping covers the new stone moulding and extends back to form a flashing under the

Top—Completed rib with two cap courses in place. Each cap section (24 inches long) is double locked to pan sheet and outside moulding course.

Above—Center pan of rib in place showing lap joint, hanging cleat and edge cleats not yet bent over edge.

Left—Moulded course in place showing bottom edge loose locked to first course, also cleats securing top edge.

Below — First course of lead applied to wood rib core showing cleats hooked over top flange, also cleats at bottom of overlap.

to top and the mouldings member with a horizontal moulding around the base of the lantern. The lead is applied in courses of overlapping sheets along the ribs, each course lock seamed to the preceding lower course.

The first course of 6-pound lead lies vertically against the side of the rib, turning out at the bottom over the adjacent tile. Each piece of sheet lead is 24 inches long and is fastened to the wood at the upper end only and secured at its top edge with metal cleats folded over a turned out flange. Each successive piece overlaps the preceding one 4 inches and the two are held against the wood at the bottom by another cleat at each overlap. The second course is a preformed ogee moulding of 8 pounds per square foot sheet lead which is applied and secured at its top edge by cleats in the same manner as the first course and the two courses

existing tile. The copings are also installed in short lengths and all transverse joints are loose locks.

Every consideration has been given to allowances for thermal expansion and to the weight-strength relation of the material. All portions of the lead in contact with masonry or concrete are coated with asphalt paint to protect the lead from free lime until the cement is thoroughly cured.

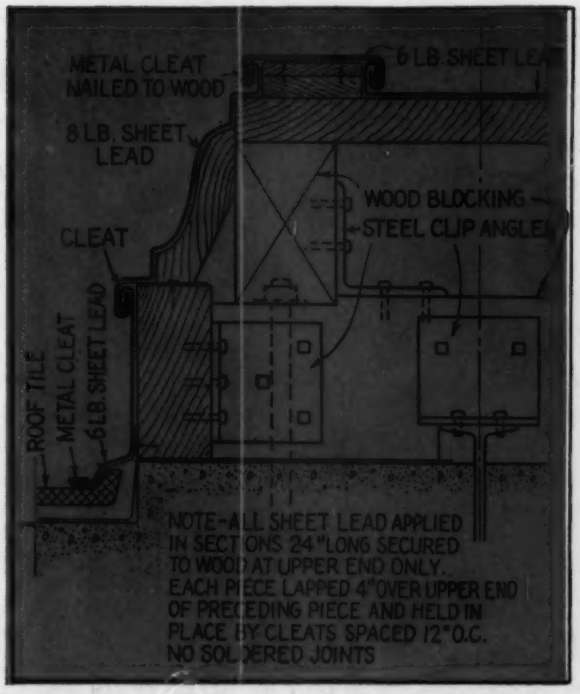
Lantern Reconstruction

The scale of the original ribs was heavy and some of the mouldings at the base and on the lantern were not entirely pleasing so William Gehron, architect, took the opportunity afforded by the repair job to refine the detail of the ribs and to rebuild the lantern.

The new lantern is roofed entirely with sheet lead applied over a skeleton of treated wood which in turn is bedded solidly in concrete. The lead is applied in essentially the same manner as on the ribs of the main dome. In this case however the ribs are smaller, only about 5 inches high at the base, and the lead covering is in one piece transversely instead of seven as on the main ribs. All sheets including the pans between ribs and the moulded courses above and below the ribs are secured to the underlying wood with metal cleats folded into loose locked joints. A watertight joint was provided at the base of the ball by means of a clamping ring of bronze secured to the steel with screws. Lead and ring were bedded in white lead.

Coping and Flashing

A lead coping and flashing was applied on the cornice around the lantern. In this case the areas to be covered were small enough not to require provision for expansion so no transverse joints were necessary. Each coping is a single sheet of lead. Here, as in the copings at the base of the dome, the portions of the lead in contact with mortar were painted with asphalt paint as a protection from free lime until the mortar is cured.


METAL CLEAT NAILED TO WOOD
6 LB. SHEET LEAD
8 LB. SHEET LEAD
WOOD BLOCKING
STEEL CLIP ANGLE
CLEAT
ROOF TILE
METAL CLEAT
6 LB. SHEET LEAD
NOTE-ALL SHEET LEAD APPLIED IN SECTIONS 24" LONG SECURED TO WOOD AT UPPER END ONLY. EACH PIECE LAPPED 4" OVER UPPER END OF PRECEDING PIECE AND HELD IN PLACE BY CLEATS SPACED 12" O.C. NO SOLDERED JOINTS

Detail cross section of rib showing method of securing sheet lead to structure with metal cleats.

The figure that tops the lantern roof and the ball on which it stands, as well as the moulded portion of the main ribs, are finished in gold leaf. The figure and ball are of iron on which two coats of red lead were applied followed by a coat of white lead as a base for the gold leaf. The ribs to be gold leafed were painted with white lead for both priming and body coats since metallic lead does not require the rust inhibitive protection of red lead.

Rake miter where rib joins base of lantern. Moulding on rib is bossed to right angle and lies along horizontal moulding under coped section.

Coping-flashing courses at base of dome showing longitudinal and transverse loose lock seams. Also, rib terminal detail of preformed sheet lead over solid wood core at base of dome.

Getting the Most Out of Your Press Brake

1001 Standard and Special Bending Forming, Flanging, Punching Operations Your Press Brake Can Perform

By Ernest E. Zideck
Sheet Metal Consulting Engineer

Fundamentals of Narrow Edge Bending

IN doing narrow edge-bending work on a press brake it is advisable to use gaging fingers at the ends of the metal piece instead of using the continuous gaging bar. The metal edge might not be sheared uniformly straight, and a mere one sixty-fourth of an inch deviation from a perfectly straight cut will make quite a difference at the ends of a long strip of metal if the one sixty-fourth happens to protrude in the middle of the strip, at this point touching the gauging bar, while the ends of the strip will move away from the bar.

The tendency of sheet metal shears is to cut the metal with a slight "bow," this being caused by the upper blade springing away from the edge of the lower blade on encountering resistance in the metal. This "springing" of the upper blade happens especially when cutting (1) heavier gauges of metal and, (2) when the cut extends over the whole length of the shears. It happens in 36-inch tin shears, and is proportionately more pronounced in 10-foot shears. In shearing 3/16 or ¼-inch plate, for instance, we will notice that in the middle of a 10-foot sheared strip, even if sheared in the most modern heavy blade equipment, at least the bottom part of the cut will bulge out.

This otherwise insignificant difference in the absolute straightness of the cut will be noticed, as above said, if we push the edge of the metal against a long gaging bar. So in narrow edge-bends work we should leave the middle of the strip free of contact with the gage. True, the other piece of the strip might show a "bow" inward, instead of outward, in which case the gaging bar would act in the same capacity as do "fingers" placed at the ends of the strip.

In narrow-edge bending, as illustrated in the drawings, it will be seen that "at least the thickness of

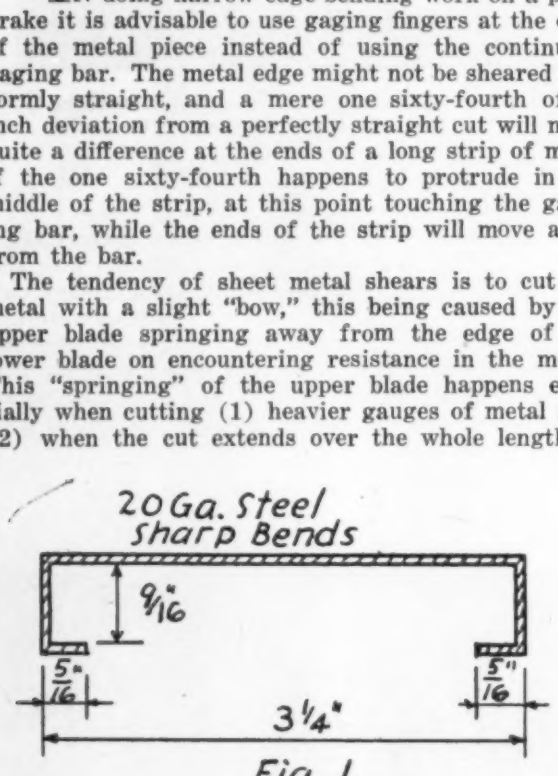


Fig. 1

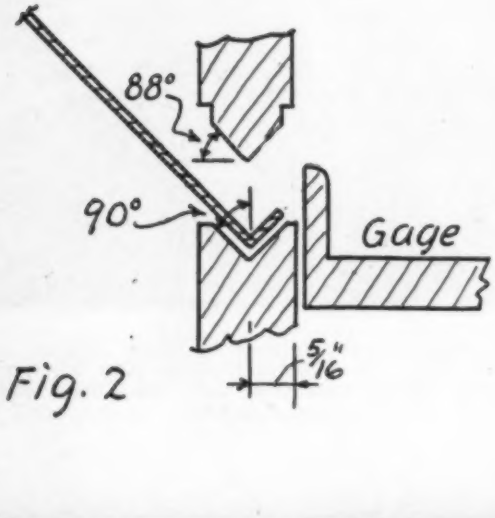


Fig. 2

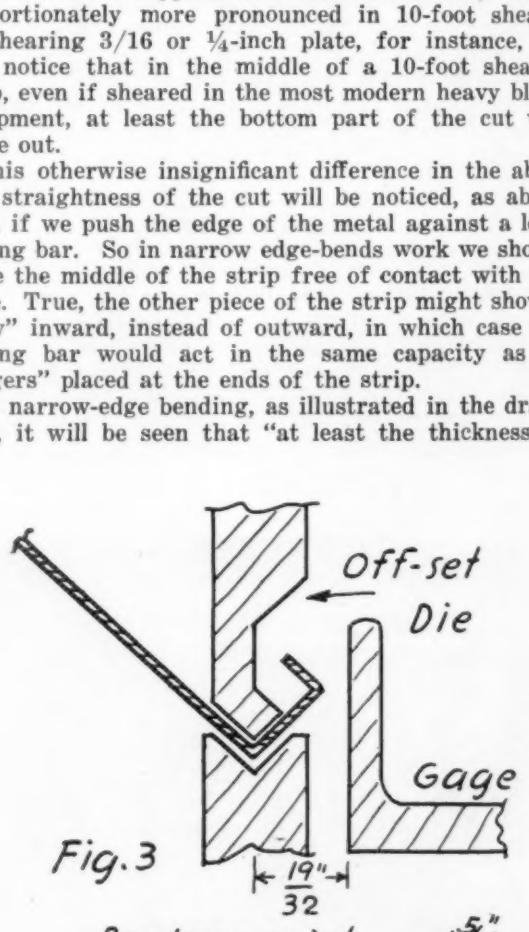


Fig. 3

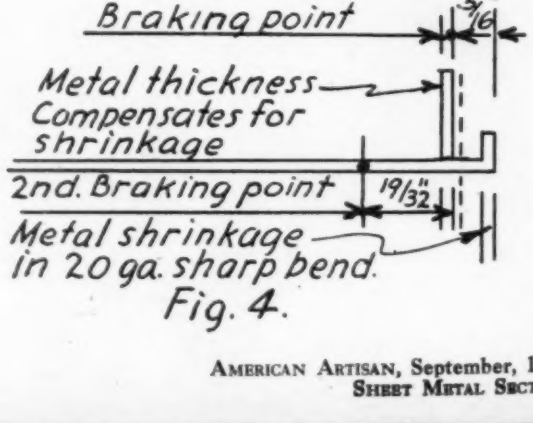


Fig. 4.

metal" must be allowed for the edge of the metal to repose on the die. In Figure 2 we deal with 20 gauge steel, and although in Figure 4 we show that the braking point is fully 5/16 from the gage, we need at least 1/16-inch in the lower die to support the edge. Accordingly, if we gage from a bar and the cut is not perfectly straight, the strip may not be supported along its entire length, and the metal may slip on being struck by the descending die.

In this kind of work it will pay to separate the strips sheared, into such as have an outward "bow" in the cut, from those having an inward "bow," and set the gages separately for each, allowing at least 1/16 support throughout the length of the strip. If at all necessary in this connection, we could "start" the bend in dies shown in Figure 5, and finish in dies shown in either Figure 2, or 3, but it takes much more power to finish a bend once started, than it takes to do the binding at one stroke.

In Figure 4 we see that a "sharp" bend will consume the whole metal thickness, making the *outside* dimension 5/16-inch, as shown in Figure 1, although we set the gage at 5/16, applying to the "inside" of the bend. The *narrower* the portion of the metal braked from its edge, the more of the metal will be consumed "from the edge," because metal "flows" that much more from its terminus than it does from its middle. This again is illustrated in Figure 4, showing that the second bend, forming the 9/16 dimension, is accomplished with only 1/32 shrinkage. It must be borne in mind that only the "sharp" bend will consume these proportions in the metal, while an "air bend," one having an inside radius of the metal thickness, will consume none of the metal. (See July AA—"Grain Movement.")

In Figure 3 we show the use of an "off-set" die for the second bend. It will be seen that this bend could not be done with a straight die, such as used in the first operation, although the first operation can be done with the offset die. In further explanation of the illustration in Figure 4, we see that for a sharp bend in 20 gauge mild steel, if we want the completed 90 degrees bend to measure 5/16 on the outside, the gage is set at 5/16-inch, though the metal thickness is less than one-sixteenth. This allowance is larger than the thickness of the metal because the bend is "near" the edge of the metal and the "flow" of the grain is *all* from the edge. Were the flange ½-inch or wider, the flow of the grain would be rather from both the edge and the portion struck, as shown in the second bend, in which only 1/32-inch is allowed for consumption from a gaged dimension.

In Figure 5 we see the employment of acute angle dies, which may be mounted as shown, or with the female die above and the male die underneath, this latter arrangement being in use in working wide sheets, avoiding the "flapping" of the sheet upwards on being struck.

In Figure 5 we see that we can set the gage at 7/32-inch from the point of the male die, receiving a narrower upturn, as shown in Figure 7, one metal thickness being consumed in the bend. On flattening-down the upturn, in flattening dies shown in Figure 5, the dimension narrows further, but here the metal does not shrink, but "flows" to the outside, as shown in Figure 7. Thus, if we intend to receive a set dimension of the "flat" shown portion of the metal, we must consider this "outflow" and subtract it. The outflow usually is one metal thickness in a single flattened edge, and two metal thicknesses in the "double," as shown in "completed" Figure 7.

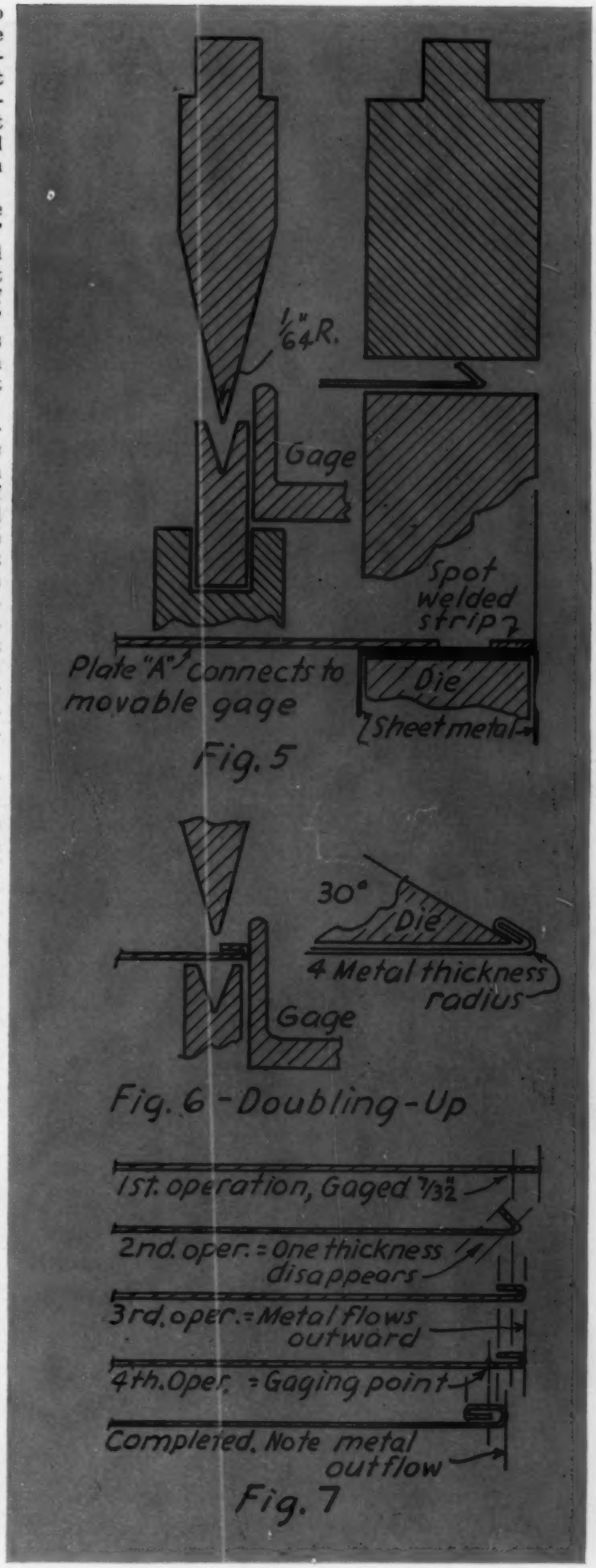


Fig. 5

Fig. 6 - Doubling-Up

Fig. 7

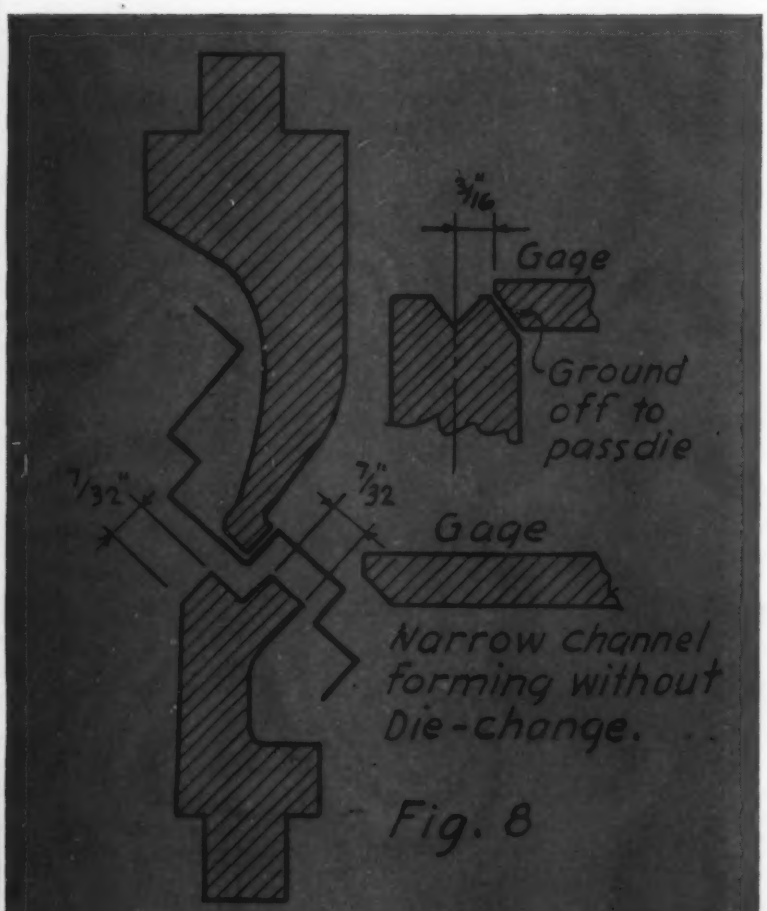


Fig. 8

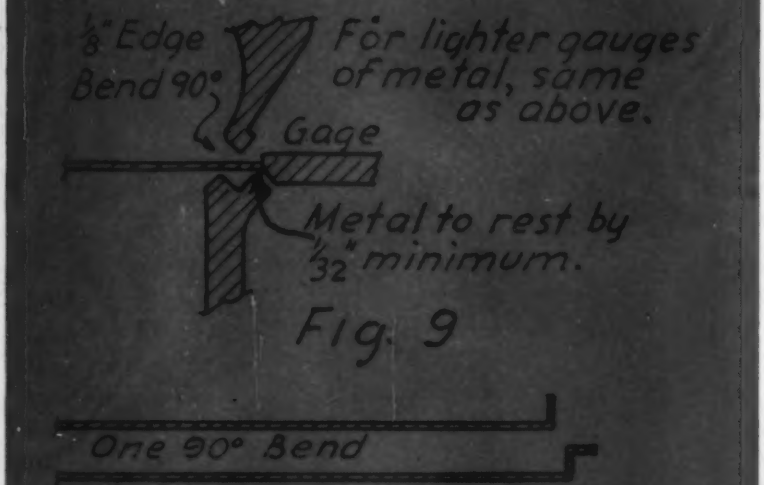
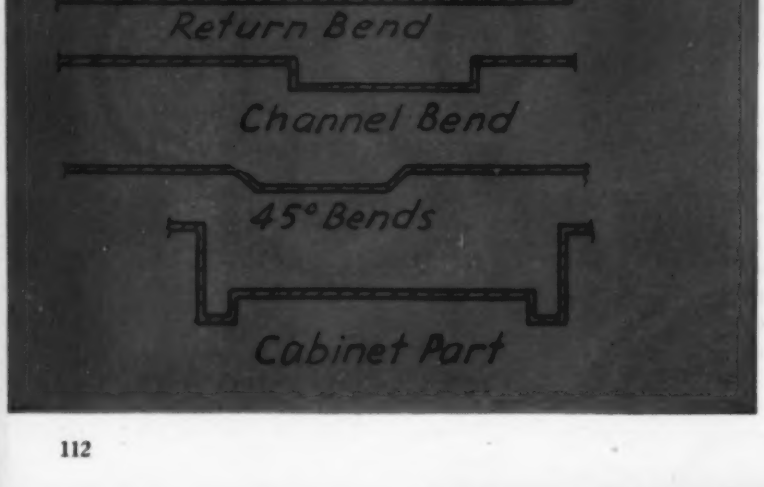


Fig. 9



In this doubling operation we must set the gage away from the edge of the metal already flattened, as illustrated in 4th operation, Figure 7. This is shown at the right in Figure 6, with the bend turning over the point of the male die assuming a 4-thickness radius instead of only three thicknesses of the metal coming into play. This "fourth" thickness of the metal will "flow" to the outside in the flattening-down operation, as shown in Figure 7.

These acute angle dies can be used to advantage in the forming of turns for "seams." For flattening down the seam (two pieces of metal hooked together) we usually employ a special grooved die into which to press the three thicknesses of the metal, but in absence of that die we can do satisfactory work by the use of the arrangement shown at the bottom in Figure 5, which can be shop-constructed for the required widths of the flattened down seam.

In ordering a special grooved die or in constructing the arrangement in Figure 5, the "flowing out" of the metal must be considered. If we make 3/16 wide upturns for the seam, the groove must be 3 metal thicknesses wider, as may be easily figured by studying the details shown in Figure 7. If a shop-constructed arrangement is chosen (or where a variety of widths of seams are required), the Plate "A" shown in Figure 5 can be extended to the rearward and fastened to the gaging means, thus moving the plate as the gages are being moved, thereby providing for different sizes of the seams to be received into the groove.

It is a fact that despite the great variety of special dies and means provided by the manufacturers of press brakes, the average fabricating shop will encounter problems which in most cases must be solved in the shop. In the first place it is impossible (or out of practical consideration) for the average fabricating shop to have all the special dies on hand. The shop might have use for a special die today, and might not use it again for a whole year. Then again, special dies are made to order; often the shop job must be done in a hurry, and there might not be time to wait for the die being made and delivered. Therefore the "adjustable" means, one of which is shown here in Figure 5, will come more and more into use.

In Figure 8 we illustrate the so-called "gooseneck" die work, with especial attention being paid to lighter gauges metal forming, as shown in the lower picture. Here the gaging-finger is ground off to admit of it passing the female die, so that it is possible in this set-up to make upturns as narrow as ⅛ of an inch. Sharp 90-degrees bends are accomplished by striking the metal down to its mere thickness. 45-degree and other lesser bends are done by regulating the descent of the male die to the desired depth. In all of the "sharp" bends it is necessary to figure into the blank and into the dimensions the metal shrinkages shown in Figures 4 and 7, and it is safe to figure one-half metal thickness for each bend in dimensioning, except when the bend is at the edge, as shown in the 90-degree bend under Figure 9, where we must allow the whole metal thickness for consumption. In figuring the blank, however, we must allow one whole metal thickness for each bend, because in bends of 90 degrees as shown in the channel bend in Figure 9, the metal is consumed from *both* directions. In 45-degree or lesser bends we do not figure any metal shrinkage except when the metal is very soft, such as soft copper or lead.

These gooseneck dies, especially if we have the female die shaped as shown in Figure 8, can be used

to advantage in most bending work because we do not need to change dies each time a previous bend is interfering with a "straight" die, as it would in the formature shown. The ground-off finger for gaging is used for the metal edge only, and then only if the upturn is so narrow that we must move the gage over a portion of the female die. All subsequent bends are best gaged by fingers shown in Figures 5 and 6, against which the completed bend or metal edge can be pressed without the metal slipping.

As emphasized in the preceding articles in this series, if we gage from a completed previous bend, we must be sure that this bend is fully 90 degrees, so that the "corner" in the metal comes to lay against the gage. But in formatures as shown in Figure 8, most of the gaging is done from the inside of the completed bend, without an outside gage being employed.

Obviously in the choice of gooseneck dies we must consider the metal thicknesses to be worked, as for instance the lower die-set shown in Figure 8 would not do in braking anything above 22 gauge, and the upper die-set in Figure 8 would not stand up under braking metal over 14 gauge. If we use *any* narrow female dies, especially the "V" dies having insufficient side supporting metal, we shall find in braking heavy gauge metals in these dies that the "middle" portion of the die will become "spread out." In other words, if we brake an 8-foot long strip of 11-gauge metal in "V" die that was built for lighter gauges, the middle portion of the female die extending from 3 to 4 feet will become extended in the upper portions of the "V," and accurate work will be impossible in this spread-out die. The male die does not suffer in this connection, because the metal is braked "against" it, instead of "in it," as in the female die.

In Figures 10 and 11 we show "bead" forming, in which again it is necessary to take metal shrinkages into consideration. In the "first" operation shown in Figure 10, one metal thickness is consumed in the radial, because of the "free flow" of the metal from its edge. In the second radial bend in Figure 10 we shall find a shrinkage of only one-half of metal thickness because the "flow" is from both sides and is not as "free" as when the grain moves from the edge. In closing down the formation, as shown in the operation marked 3rd, some of the metal will be compressed back into its former place, but if we fail to provide one and one-half metal thicknesses for consumption in the two first operations, the bead on being closed might not close entirely, a gap ensuing between the straight and the radial portions of the sheet.

For not too exacting accuracy in bead work we might employ the "bulb" die shown in Figure 11, using it in conjunction with the right size of a standard female die, and using a similar female die for "closing" the bead. Operation here is "progressive," adjusting the die descent to a certain depth and then allowing the machine to strike successively, with the operator moving the sheet slowly, the result being a radial formation shown by the dotted lines. A die descent to a shallow depth will form a larger radius in the sheet, and a deeper descent will produce a smaller radial. On moving the material as far as the formed portion of it will allow, we then remove the male die and insert a female die resembling the one at the bottom in Fig. 11, and by graduated die descent we can close the formation fairly accurately to pass inspection. The "open" portion of the female die, the so-called "working" portion, should be wide enough to allow for forming enough metal into the "dotted"

(*Continued on page* 152)

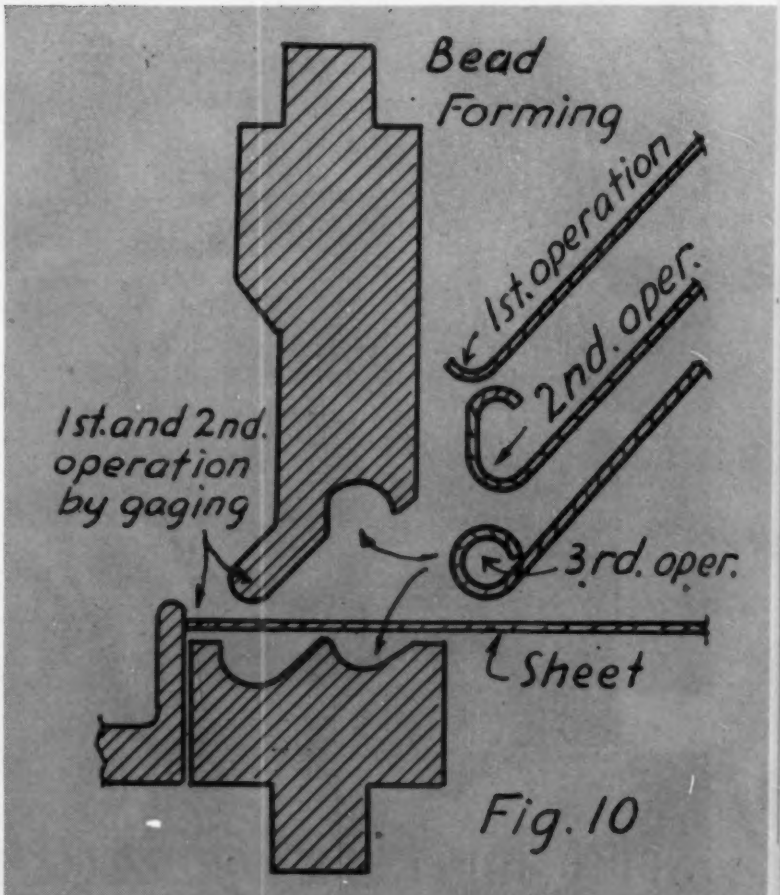
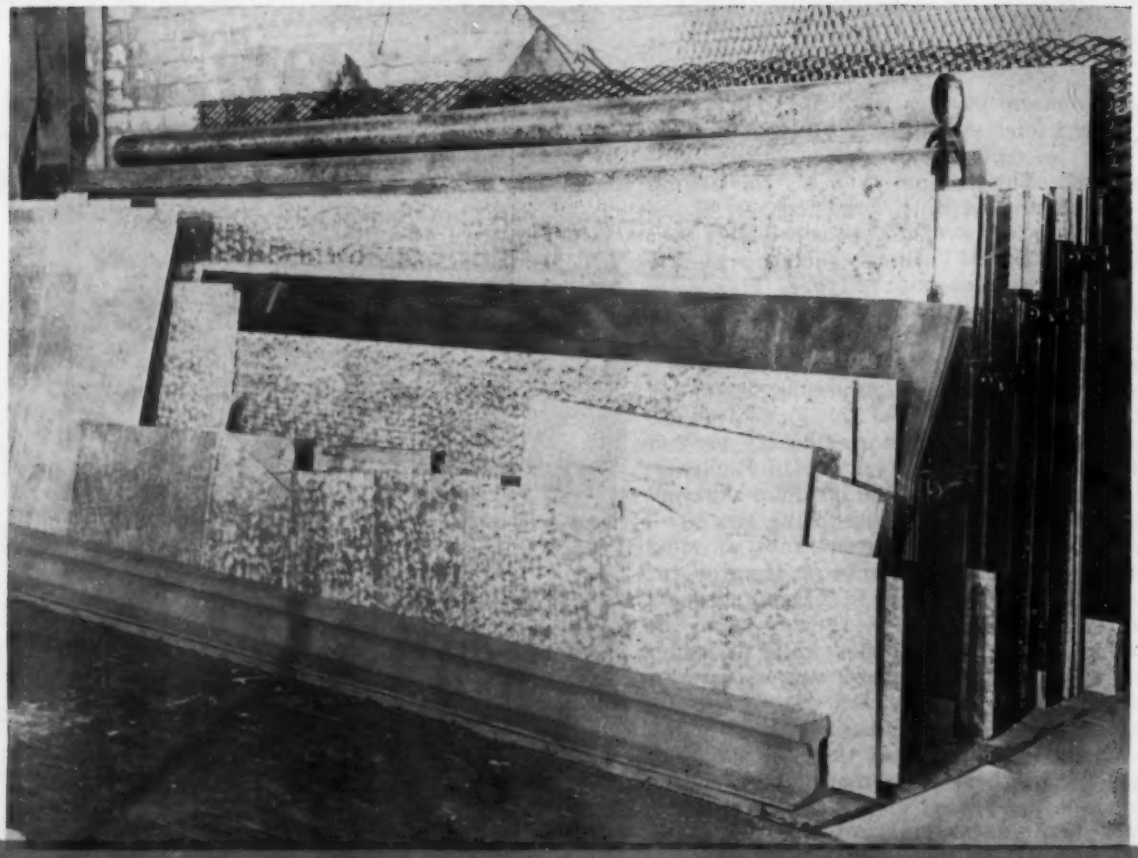


Fig. 10

Fig. 11

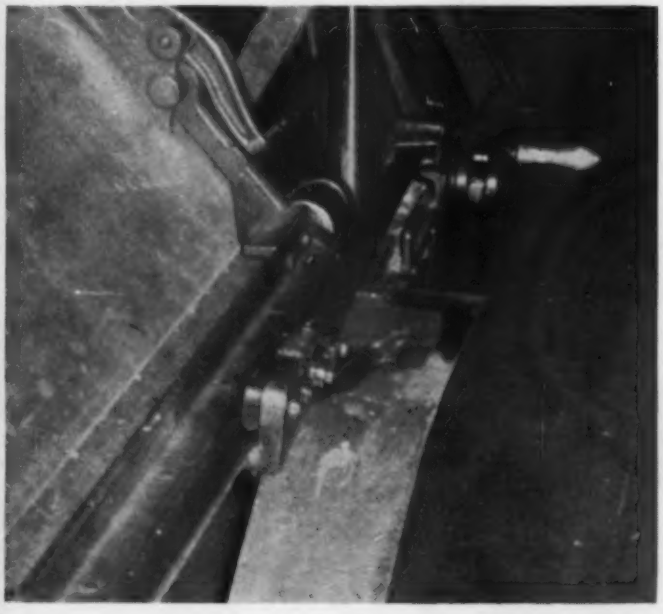


Schiering Puts "Everything on Wheels"

By Lawrence E. Gichner, Gichner, Inc., Washington, D. C.

SHEET metal shops in metropolitan New York have to concentrate equipment and operations in the smallest space possible. The firm of J. & W. Schiering overcomes this handicap by putting most of their equipment on "wheels" so that they can "roll" the machines and tools anywhere in the shop or clear large spaces for work which is bulky. By so having their equipment on wheels they are able to utilize their space to three or four times its normal capacity.

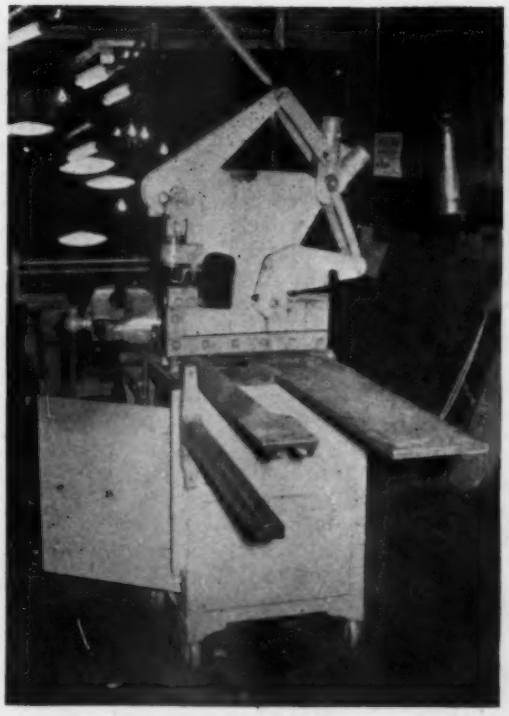
The Joseph Schierings, both senior and junior, have an amazing capacity for invention. Throwing a motor, a piece of angle iron and a shafting together,

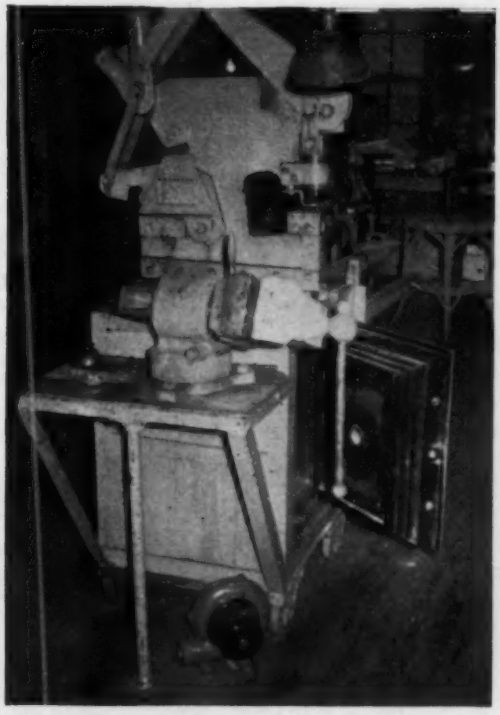


Left—An unidentified bending brake splitter finds continual use cutting wide sheets into strip. Right—Anvil and vise on wheels, in the Schiering tradition, and "stake" table which is movable, but not on wheels.

With an old safe as a base (valuable tools can be locked up in it) the Schierings evolved this angle and bar cutter, punch, vise for very heavy work, rail support which can be moved around the shop.

The sheet rack described in the text is on the facing page. Sheets can be put in and taken out from the end without unloading the entire stack.





they produce an efficiently working machine—forge, grinder, buffer, compressor, drill press, or what ever particular gadget they need to effectively complete a certain job.

The photographs show a few of the ingenious assemblies in this shop. One unusual assembly is built upon and around an old iron safe. To one side a heavy shelf is welded and a rotating head, swivel-base, heavy duty vise is permanently bolted to the heavy bed of the shelf. For real heavy work a swinging pipe leg is hinged under the shelf and can be dropped to the floor to insure firm support. On the other side of the safe there are provisions made to support under clips a large flat bench plate, a mandrel stake and a half-round stake—all equipment used for hand seaming ducts. On top of the safe is a combination, compound-leverage punch and shear.

Why a safe as the base for this machine? Because valuable drills, blades, dies can be kept under lock.

Another photo shows two portable stands. One, on legs only for firmness, is a bench plate to take a variety of stakes. It can be "worked" all around or by two men. The other, on wheels, is a frame for a heavy anvil and a swivel vise. Both these stands were cut and welded in the shop.

Also on wheels, is a "riveting table" made in the shop from angle iron with a large and heavy plate which can be slid out from the top to permit riveting or malletting of formed pieces as a mechanic is doing in one photo or used as a bench top as shown in another view.

Many contractors would like to have a forming brake sheet slitter. Schiering has one of these and uses it constantly—but there is no identification.

Again on wheels, is this "riveting table"—also used to hammer seams and flanges. The heavy top can be slid in or out for wide or narrow work.

This shop made drill press, used where very slow speeds are required, was built in the shop from an old two-foot treadle. Step pulleys provide several speeds.

Schiering uses this slitter to cut side rails for ducts. To make easier the braking of wide sheets, Schiering's "big" brake has two adjustable boards on the back of the brake to support wide sheets.

One of the newest and best innovations in this shop is an "on-edge" sheet storage rack—shown in a photo. This rack is built of 2 by 4's but could be built of metal and will hold all gauges of 48, 36, 30, 24-inch sheets in long or short lengths. Schiering thinks the rack's best feature is the fact that sheets can be removed or put in from the ends. The bottom is lined with metal to allow the sheets to slide easily. The photo shows that the end has a "latch" which serves two purposes—(1) the latch keeps the sheets in orderly fashion within the compartment and (2) the latch acts as a cross brace to hold the uprights in position when the compartment is heavily loaded.

Although capable of handling anything in the general sheet metal line, the big bulk of the Schiering business is heating, ventilating and air conditioning, of which they take the entire contract, including the electrical, plumbing, carpentry, plastering and painting work. They believe by handling the entire job the work and contract are simplified and the customer has the advantage of dealing with a single firm. Besides keeping a stock of motors and blowers on hand ready for any emergency they are equipped for electrically testing all types of refrigeration whether freon, sulphur dioxide or methal chloride.

Emergency and night work find the Schierings well prepared. Since maintenance work is part of their job after stores and factories are closed, they have within their shop provided sleeping accommodations for five, a kitchen with pots, pans and dishes, and a shower room that sprays, not only from overhead and the sides, but also the floor. This shower is a mecca for mechanics during the sweltering hot summer months.

The Chicago Apprenticeship Plan

(*Continued from page* 83)

Third Six Months:

Shop—Layout square and rectangular fittings and welding.
Mathematics—Circumferences and areas.
Drafting—Square and rectangular transition fittings.
Related Information—Source, use, and characteristics of sheet metal.

Fourth Six Months:

Shop—Layout square and rectangular transition fittings and welding.
Mathematics—Volumes and capacities.
Drafting—Parallel line development.
Related Information — Kinds and uses of rivets and other fastening devices.

Fifth Six Months:

Shop—Layout round tees, fittings and welding.
Mathematics—Velocities and air changes.
Drafting—Radial line development.
Related Science—Gutters and cornices.

Sixth Six Months:

Shop—Laying out round tapering tees, fittings, and welding.
Mathematics—Velocities and air changes.
Drafting — Triangulation pattern development.
Related Science—Metal roofing and skylights.

Seventh Six Months:

Shop — Laying out rectangular, square-to-round fittings, branches and welding.
Blueprint reading and duct designing.
Applied Science—Code of regulations.

Eighth Six Months:

Shop—Erection, setting fans, furnaces and welding.
Estimating.
Drafting—Measuring and Detailing.
Applied Science—Blowers and Furnaces.

Note—Related information should be closely related to the progress of the manipulative portion of the course and presented whenever it is timely.

The Joint Sheet Metal Apprenticeship Committee recommends that the text book, "AIR CONDITIONING METAL LAYOUT" by Joseph J. Kaberlein, among others, be used in the school for related instruction of apprentices in Chicago.

10. Wages for Apprentices.

First six months.....25% of prevailing journeymen's rate
Second six months...27% of prevailing journeymen's rate
Third six months.....30% of prevailing journeymen's rate
Fourth six months....33% of prevailing journeymen's rate
Fifth six months.....37% of prevailing journeymen's rate
Sixth six months.....42% of prevailing journeymen's rate
Seventh six months..48% of prevailing journeymen's rate
Eighth six months...58% of prevailing journeymen's rate
Ninth six months.....68% of prevailing journeymen's rate
Tenth six months.....88% of prevailing journeymen's rate

Apprentices who receive credit for previous experience shall be paid, upon entrance, the wage rate of the period to which such credit advances them.

(Part 2 will follow)

APPLYING THE PRINCIPLE OF COLUMNAR STRENGTH

THIS is the case of a gutter that was lined with 16 oz. soft copper. The metal buckled and eventually fractured in many places because it did not have sufficient columnar strength to transfer the forces of expansion and contraction to the expansion joint. As a temporary expedient, roofing cement was smeared over the cracks.

To make a lasting repair, the cracks were properly sealed, and three stiffener members, made of 16 oz. cold rolled copper, were continuously soldered to the lining and the old expansion joints were revamped. This repaired gutter now has given a longer period of trouble-free service than did the original installation, and it is still in good condition.

Thus the principle of columnar strength once again proves its value. Revere has reduced this principle to a matter of engineering design with the assurance of satisfactory performance. Details will be given in a new booklet now in preparation. Ask to have your name placed on our list to receive a complimentary copy. For aid on difficult problems, call on the Revere Technical Advisory Service, Architectural.

REVERE

COPPER AND BRASS INCORPORATED

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Executive Offices: 230 Park Ave., New York 17, N.Y.

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Listen to the Human Adventure *on the Mutual Network every Wednesday evening, 10 to 10:30 p. m., EWT*

ASSOCIATION ACTIVITIES

Contractors' National Association

The Sheet Metal Contractors' National Association, Inc., is mailing to members a 12-page bulletin entitled "The Use of Public Works to Sustain Construction Activity" published by the Construction and Civic Development Department, Chamber of Commerce of the United States, Washington, D. C. The foreword contains a postwar challenge to mitigate the inevitable ups and downs in a free economy, without dampening initiative and reliance upon resourcefulness and private investments of our citizens.

The National Chamber favors timing useful public works with a view to advancing them when private work is falling off and retarding them when facilities of the construction industry are being used to capacity.

Clarence J. Meyer, National Secretary.

◆

The Carolinas

The July, 1945, issue of "The Carolinas Roofer"—Vol. 3, No. 7—carries a message from President L. K. Flynt reviewing the progress of the past year and urging the membership committee to gather into the fold the several companies that should be in the association.

The Architectural Committee and members are urged to contact the architects and contractors more often as cooperation is needed in obtaining right specifications for certain jobs.

Members are reminded to check with the sign and emblem committee.

Training of Mechanics was another subject and an opportunity to help members and the other fellow, too.

The Legislative and Insurance Committee will be more than pleased to help solve problems and questions—a considerable amount of work was done last year and a good foundation established on several pending questions.

Committee chairmen can succeed only with the cooperation of members and members are invited to consult them on various problems.

The president invites ideas from members to better the association.

◆

Florida

An emblem for The Roofing & Sheet Metal Contractors Association of Florida was approved at the recent quarterly meeting of officers and directors at Orlando, and the secretary was instructed to have "dies" made for printing the bulletin and for stickers for each member. Members are invited to write the secretary for the number of stickers required for cars and trucks.

Attending the Orlando meeting were President J. A. Gross, Vice President Fred Faulkner, Frank Tack, Directors Mack Fillingham, S. L. Boyett, and Secretary J. T. Stewart and J. Caldwell.

State Senate Bill No. 603 (Unemployment Compensation) was amended in the last Legislature to allow a reduction in rates effective July 1, 1945, but retroactive to January 1, 1945. All members are urged to write to the Florida Industrial Commission, Unemployment Division, for details concerning the change in this law, also to ask for the amount of credit due them.

Members were urged to write their senators and congressmen to oppose bill H. R. 2232, sponsored by Congressman Mary L. Norton (D-N. J.). This bill, if passed, would establish a commission with sub-agencies throughout the country, with power to impose penalties or fines and imprisonment upon employers declared guilty by the commission or its sub-agency of discrimination in hiring employees because of race, religion, color or national origin.

Latest changes in government regulations are cited.

Full details regarding Regulation W which governs down payments and maximum maturity of sales of service, materials and manufactured articles, may be had by writing to Federal Reserve Bank of Atlanta, Ga., for article on Consumer Credit.

The next quarterly meeting of the Officers and Directors will be held in Clearwater—the date to be announced later—and members are invited to attend any or all of these meetings.

J. T. Stewart, Secy.-Treas.

◆

Cleveland

A meeting of the Warm Air Furnace League of Cleveland was held August 28, 1945, at the Hotel Carter, Cleveland, with Don Fisher acting as Chairman. The facilities were provided by the Cleveland Wholesalers, and the meeting was called to have a real exposition of the workings of the new Cleveland Code. Jack Scheel, the chief inspector in charge of the enforcement of the Code was present and went over the code section by section to clarify it for all concerned. The sections regarding flues and chimneys received a lot of attention in the discussion period as did the registration section. All contractor dealers selling and installing warm air heating in the city of Cleveland have to take out a license and post a bond, to insure faithful performance of the work. Scheel pointed out that this section would be enforced and that all dealers had to take out a license.

After the code discussion Don Fisher introduced George Boeddener, Managing Director, NWAH&AC Association who spoke briefly on the dangers of competitive methods of heating in the post-war world and read from the Curtis Publishing Company Survey on purchaser preferences for forms of heating to emphasize his points.

Dan Schmidlin of Toledo, Chairman for Ohio for the drive to set up a dealer's division within the NWAH&AC Association, gave a powerful appeal for participation of all local groups in the effort, and said that the plans being made were of great importance to every dealer regardless of location. He pointed out that the proposed dealers participation was the first instance where the manufacturers had not carried the entire load, and that the proposed advertising program would have to go over if the industry hoped for the measure of post-war markets that would be possible only if the advertising program got under way in a real hurry. Schmidlin also pointed out that the small dealer would benefit just as much as the dealer doing over a half-a-million in sales annually and that the effort of the small dealer was very essential to the ultimate success of the entire program.

Many dealers signed up at the meeting, and it was decided to hold another meeting in the near future to canvass those who for some reason or another did not sign and to make another presentation of the plan to them to gain their participation.

Refreshments furnished by the Cleveland Wholesalers ended an enthusiastic meeting.

Association Activities . . .

Stoker Manufacturers Meet

The Stoker Manufacturers Association held its first postwar conference in the form of the 28th annual meeting at the Stevens Hotel in Chicago on August 22 and 23 with over 100 representatives of stoker manufacturing and allied firms and guests in attendance.

Advertising and Sales Campaign

The meeting was devoted largely to postwar plans of stoker manufacturers and to reconversion problems in the stoker industry. A complete national advertising and sales promotional campaign for the industry was presented and thoroughly discussed. While the program was not approved, the members of the association are to study it carefully and further meetings will be held in the near future. The program as proposed by the Association's Advertising Committee will feature an industry-wide national advertising campaign stressing the advantages of automatic stokers and automatic coal heat to the public.

Production Expectations

It was revealed at the meeting that Stoker manufacturers in general will be able to step up their production of domestic stokers gradually during the balance of this year and that in 1946 production and sales may be on the highest level in the history of the industry. Some of the materials bottlenecks which the industry has experienced since the fall of 1944 have been eliminated but the foundry situation at the present time is hampering the immediate prospects of a greatly accelerated production rate of domestic stokers.

The meeting developed a definite optimistic tone of the future of automatic coal stokers for heating and commercial and industrial purposes. Officers of the Association pointed out during the meeting that competition between the manufacturers of different types of fuel-burning equipment and the producers of coal, gas and oil will be more active and more aggressive than ever before and that intelligent planning and capable execution of these plans will be necessary to secure a fair share of the billions of dollars which will be employed by millions of American home owners for the purchase of necessities, equipment, and all kinds of commodities during the postwar years ahead.

1946 Officers

New officers of the Association were elected for the ensuing year. **Walter Sormane**, Mendota, Illinois, sales manager, Conco Engineering Works, was elected president succeeding John M. McClintock, Chicago, manager, stoker division, Illinois Iron and Bolt Company, who had served as president for four years. **George W. Graham**, Chicago, president, Eddy Stoker Corporation, was elected vice president succeeding Mr. Sormane and **Claude A. Potts**, Lebanon, Indiana, vice president, U. S. Machine Corporation, was elected secretary-treasurer succeeding Mr. Graham. **Marc G. Bluth**, Chicago, was re-appointed executive secretary.

Board of Directors

Mr. Sormane, Mr. Graham and Mr. Potts were also elected to the board of directors with Mr. Sormane as chairman. Other members of the board elected were: **C. T. Burg**, Cleveland, Ohio, vice president-sales, Iron Fireman Manufacturing Company; **F. H. Herndon**, Chicago, manager, stoker division, Link-Belt Company; **J. M. McClintock**; **W. L. Schultz**, Louisville, Kentucky, vice president, Anchor Stove and Range Company; **H. E. Sill**, Muncie, Indiana, vice president, Muncie Gear Works, Inc., and **Milton A. Young**, Catskill, New York, sales manager, Catskill Metal Works. Mr. Young is also chairman of the Association's Anthracite Section.

Reports on the work and activities of the various standing committees of the Association were presented. They showed a large degree of construction activity and the Association is planning extension of its activities especially in cooperation with allied industries. The membership of the Association is at an all-time high, representing over 90 per cent of the total production of the industry.

The annual S.M.A. dinner was held on Wednesday evening, August 22nd, with Mark A. Brown, vice president of the Harris Trust and Savings Bank, Chicago, as the principal speaker. Mr. Brown gave a sparkling and stimulating talk. He stated a great conviction in the ability of American business men and industry to meet the challenge of the new problems in the fast changing postwar scene. Besides that, he matched the wit and humor of the toastmaster, Milton A. Young.

On Thursday, August 23, the associate members of the Stoker Manufacturers Association arranged a golf game and an informal get-together and dinner in the evening, also at the Stevens Hotel. The Association dispensed with the usual official golf tournament. P. L. Tolerton, Chicago, White-Rodgers Electric Company, served as chairman of the committee in charge of the second day events.

◆

ASHVE Research Financing Planned

The appointment of a special Committee on Research Fund Raising is announced by Dr. C.-E. A. Winslow, President of the American Society of Heating and Ventilating Engineers and its membership is: Dr. A. C. Willard, President of University of Illinois, Urbana, Ill.; W. L. Fleisher, Consulting Engineer, New York, N. Y.; E. Holt Gurney, President, The Gurney Foundry Co., Ltd., Toronto, Ont., Canada; E. N. McDonnell, President, McDonnell & Miller, Chicago, Ill.; Dr. B. M. Woods, Director of University Extension, University of California, Berkeley, Calif.; J. Herbert Walker, Vice-President, The Detroit Edison Company, Detroit, Michigan.

The objective of the Committee is to supervise the fund raising for the Society's enlarged program of research at its Laboratory in Cleveland and in cooperating institutions. The goal set by the Committee on Research to meet current research needs is budgeted at $110,000 for the next three years. The Committee on Fund Raising will announce its plan shortly in communications to Society members and to the heating, ventilating, air conditioning industries at large.

For 25 years the ASHVE has conducted its own Research Laboratory, and its reports published in the Transactions and elsewhere have provided fundamental data for engineers, which have been vital in both peace and wartime. Members of the Society participate directly in the support of the Society's research because of the per cent allotted from each member's annual dues to the Research Fund.

Research Programs are conducted under the direction of the Committee on Research, which Committee is elected by the Society membership. The value of the research results available to members and the allied industries cannot be estimated, and in the present accelerated pace of technical advancement there is great promise for the future, the extent of which no individual can fully visualize. The Committee, therefore, feels that the proposed budget for research is a modest one and should receive the prompt and enthusiastic support of the heating, ventilating, air conditioning industry.

◆

Humphreys Joins Laboratory Staff

On September 1, Clark M. Humphreys came to the Research Laboratory of the American Society of Heating and Ventilating Engineers, Cleveland, as Senior Engineer. He has an extensive background of training in the Mechanical engineering field and a wide experience in heating and ventilating design, as well as a fine record as a teacher and a writer on technical subjects.

For many years he was on the staff of Carnegie Institute of Technology, Pittsburgh, in charge of instruction in heating, ventilating, air conditioning, and plumbing.

Mr. Humphreys was born in Kenton, Ohio, and after

(*Continued on page* 124)

Equipment Developments

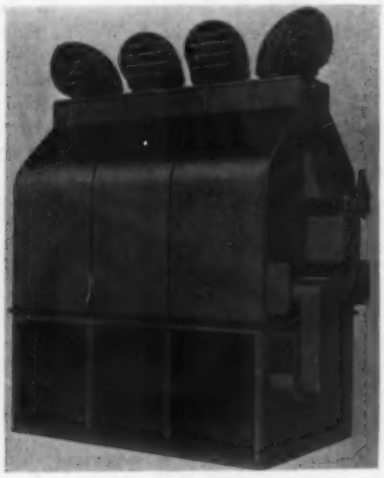
For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 128 and mail to us.

△ Indicates manufacturer not listed in 1945 Directory.
● Indicates product not listed in 1945 Directory.

△ 54—Direct Fired Heaters

Herbert H. Davis Company, 1616 South 52nd St., Cicero, Illinois, announces a new line of direct-fired heaters ranging in capacities of 75,000 to 2,000,000 Btu per hour, and available for all types of fuel—coal, oil and gas.

The units are made entirely of steel; are self-contained; equipped



with automatic control systems; and lend themselves either for air distribution direct through rotatable diffusers or through ducts.

The unit is shipped in two sections; filters may be applied without special transformations requiring additional floor space; lower resistance through heater provides quieter fan operation and lower motor horsepower; tubes may be cleaned while standing on the floor; includes independent V-belt driven induced draft fan; and self-contained automatic thermostatically controlled humidification.

◆

55—Branch Patterns

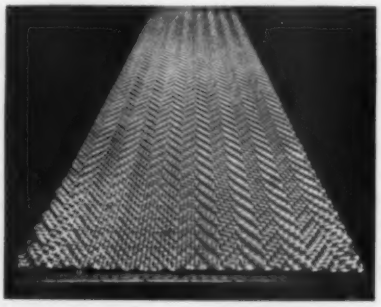
G. L. Gray, 507 Grand Avenue, New Haven, Conn., now offers full size branch patterns from 2 to 24-inch intersecting trunk line 2 to 48 inch in diameter at a 30-degree angle in two sets.

Set A-1 contains 245 full size 30 deg. branch patterns 2 to 12 inch on 2 to 48 inch. Set A-2 contains 132 full size 30-degree branch patterns 12 to 24 inch on 12 to 48 inch.

Forty-five degree round branch patterns, 2 to 24 inch on 2 to 48 inch, in two sets, are also available.

△ 56—Rigidized Metals

Rigid-Tex Corporation, 658 Ohio St., Buffalo 3, announces Ridgidized metals for strength, utility and texture. Rigidized design-strengthened sheets, developed and engineered in



cooperation with The Glenn L. Martin Company, and available in widths up to 36 inches for general use, have alternate concave and convex beads arranged to provide flexural and torsional rigidity in all directions. The tops of these beads are flat to afford fastening surfaces to attach plain sheets by riveting, spot-welding or cycle-welding.

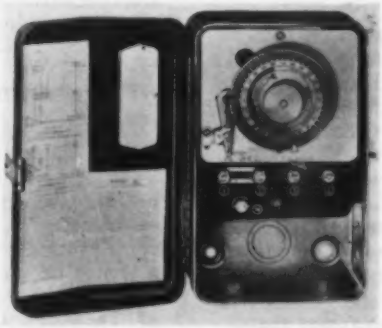
Rigidized metals include all ferrous and non-ferrous sheet and strip produced by the Rigid-Tex patented design-rolling process. A variety of texture designs are obtainable.

Rigidized metals can be stamped, bent, punched, roll-formed, cycle welded, seam welded, riveted and soldered.

◆

57—Telechroned Switches

Paragon Electric Company, 37 West Van Buren Street, Chicago 5, has improved the 300 Series time switches



by adding a Telechron motor—an industrial type, self-starting synchronous motor. Operating advantages are: complete, self-oiling lubrication by patented capillary oiling system; practically instantaneous self-starting at full rated load; gear reduction fully sealed to exclude dust and dirt; and lower power consumption.

The 300 Series is light in weight, small and compact, has switch capacity of 3,000 watts per pole with easily mounted, accessible terminals, skip-trip feature, knockouts on both sides, back and bottom, and two bearing plate construction.

The 300 Series is used for controlling attic fans, stokers, oil burners, blowers, pumps, valves and motors.

◆

58—New Tempered-Aire

Gar Wood Industries, Inc., 7924 Riopelle St., Detroit 11, is now tooling for production of a new and improved line of automatic home heating equipment.

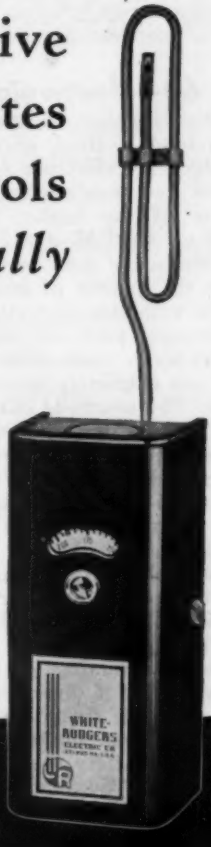
Both the Tempered-Aire and boiler-burner units will be more compact and will operate at higher efficiency than their prewar predecessors. The

new models will be built almost entirely of die formed parts which make possible easier assembly, better operation, simplified service, improved appearance and a greatly expanded manufacturing capacity.

All prewar Gar Wood heating equipment dealer franchises have been cancelled, and the company is now in the midst of an aggressive campaign to sign up new dealers. In most cases the franchises are exclusive. Preference is of course given to dealers who carried the line before the war stopped production.

This is the exclusive WORKING FORCE that operates White-Rodgers Temperature Controls *quickly, accurately* and *automatically*

This is the powerful Hydraulic-Action element used exclusively on White-Rodgers automatic temperature controls. Such controls are compact, may be mounted at any angle or position, and are easily adjustable. They need no recalibration no matter where installed. Accurate and trouble-free, White-Rodgers controls are used predominantly in heating, air-conditioning and refrigeration. Write today for catalog and installation data for your post-war heating installations.



Here's How It Works:

CONTRACTED

At left is a cross-section of the diaphragm and part of the liquid-filled capillary. The liquid has contracted, the diaphragm moving inward, causing the switch to function.

EXPANDED

In view at left, the liquid charge of the capillary has expanded with a rise in temperature. This positive force moves the diaphragm outward and causes the switch to function.

WHITE-RODGERS ELECTRIC CO.

ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air Conditioning

Equipment Developments.

For your convenience in obtaining information regarding these items, use the coupon on page 128.

● 59—Scribing Disc

The Topflight Tool Company, P. O. Box 6728, Towson 4, Maryland, offers Loftsman's layout scribing disc—a tool invented by an aircraft plant engineer, to eliminate errors and save time in layout of sheet metal gauges. It is graduated for the principal gauges of sheet metal.

After one line, indicating one edge of a piece of sheet metal, is laid out,

the draftsman merely inserts a pencil or scriber in the hole corresponding to the required gauge of the metal concerned, pulls the disc along the straight edge or curved spline parallel with the line already drawn. The gauge acts as a spacer between the pencil or scriber and the straight edge.

The new Topflight Scribing Disc is an instrument for accurately scribing a line equidistant to a given line.

◆

60—Fleetweld 11-HT

The Lincoln Electric Company, Cleveland 1, Ohio, announces a new shielded arc electrode for groove butt joints and welding horizontal or flat fillets in the higher tensile steels, such as A.S.T.M. A-212.

Exhaustive field tests have shown that the quality of groove buttjoints made with this new electrode are exceptionally good and free of porosity. Fillet welds made with Fleetweld 11-HT are extremely smooth with a flat face. The electrode has a remarkably low spatter loss and welds are produced with a steady arc and are free from undercut.

Speeds are remarkably good and low alloy, high tensile steels can be welded as easily and as fast with Fleetweld 11-HT as mild steels can be welded with the ordinary E-6020 type of electrode.

The electrode may be used with either alternating current or direct current and if direct current is used, the electrode should be negative. The new electrode conforms to American Welding Society specifications E-7020 and/or E-7030, and is available in 3/16 and ¼ in. diameter sizes, 18 in. long.

△ 61—Troxide

Waverly Petroleum Products Company, Drexel Building, Philadelphia 6, is marketing Troxide—a new "pickling" agent to remove rust, scale, tarnish, and incrustations of cement and lime from metals.

Troxide is a dry, inert compound—non-eruptive, non-inflammable. The compound is dissolved in water—3 lbs. per gallon of water. 99.8 percent of the compound will go into solution eventually. Heated water, simple stirring, air agitation or water spray under pressure near the bottom of the tank will hasten dissolution. Pickling can start immediately. Pickling tanks should be lined with glass, lead, earthenware or acid proof clay. The powder is relatively harmless, but the solution is designed to pickle metal, and therefore, corrosive. The Protectofoam eliminates corrosion outside the tank and protects the operator.

Troxide is packed in ordinary wooden barrels.

◆

62—Spring Steel Latch

Tinnerman Products, Inc., 2065 Fulton Rd., Cleveland 13, has developed the new spring steel Speed Nut Latch No. 1663 for instant attachment and removal of box covers, access doors, panels, and inspection plates.

The Speed Nut is available in five material thicknesses and three styles of ball studs.

When writing for samples, please specify (a) pull-out tension required (3½, 8, 12, 18, or 30 lbs.); (b) thickness of panel to which Speed Nut will be attached, (c) type of stud, and (d) length of plain or threaded shank, or length of grooved stud.

△ 63—Dustex Collector

Dust Filter Company, 160 N. LaSalle St., Chicago 1, has developed and manufactured the Tubular Dustex dust collector in three sizes—applying the principle of reducing the ratio of air volume to filter surface area. All are portable and self-contained and designed to meet the need for an efficient and economical means of removing dust. The unit is specially adaptable to the requirements of buffing, polishing and grinding machines.

No collector bags are used in the unit. The filter surfaces are tubular

in design and are bottomless. Dust filtered through them is collected in a pan at the bottom of the unit.

The collector maintains a static air pressure of more than 4 inches at a velocity of over 5000 lfm. It is fireproofed. Units weigh from 150 to 250 pounds; are 36 to 48 inches high. Motors are A.C. ¾ and 1½ h.p. 3 phase, 60 cycle.

◆

64—Gas Analyser

The Hays Corporation, Michigan City, Indiana, announces the development of a special analyzer for testing the high purity of oxygen, carbon dioxide, and nitrogen in the range from 90 to 100 per cent.

The Hays Series "E" is offered in two styles—a wall mounted model for permanent installation and a portable model supplied in a neat metal case with leather carrying handle. It may be had with a single unit or with two units. A junior model (Series EJ) is also obtainable with a burette capacity of 30 cc.

A Symbol of Heating Progress

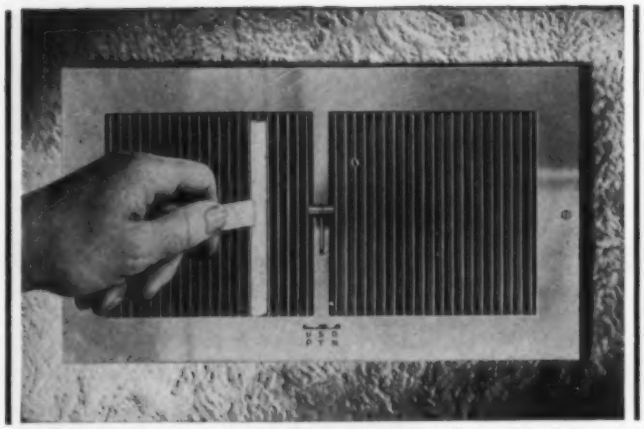
• For thirty years the name RYBOLT has stood for better heating efficiency, economy and dependability. It has stood for progress in the industry because RYBOLT has pioneered in developments that kept pace with ever changing requirements.

The RYBOLT trade mark is the symbol of that progress in the past. It will continue to represent that progress in the future, because RYBOLT engineers are keeping abreast of new trends and are constantly doing practical research and experiment to improve the product. New designs and new features will be adopted as fast as they prove practical and sound. The postwar RYBOLT line will be a better line for you to handle — more profitable for you to sell and more satisfactory for the consumer to buy. The RYBOLT trade mark is our postwar pledge of heating and air conditioning service that will measure up to the highest standard.

BUY MORE WAR BONDS

THE RYBOLT HEATER COMPANY

615 MILLER STREET ★ ASHLAND, OHIO



Get H&P to the STANDARDIZED SIZES OF A.C. REGISTERS!

The Register Standardization Program of the National Warm Air Heating and Air Conditioning Association calls for the exclusive use of 4" and 6" height registers and returns. You are not in line with this highly desirable Standardization Program unless you are planning to confine your use of Air Conditioning Registers to these standard sizes, which in terms of H&C No. 75 Design Class Numbers are:

H&C NO. 751 REGISTER, illustrated above, is the only A.C. Register employing the incomparable turning blade valve. It provides more thorough and complete air distribution than can be had with any other register.

No. 751	No. 754	Nos. 750 & 757
10x4		
10x6	10x6	10x6
12x4		
12x6	12x6	12x6
14x4		
14x6	14x6	14x6
		24x6
		30x6

For best service during this critical period order strictly in conformity with Bulletin S-121, showing our present and postwar Register and Accessory Lines. Bulletin S-121 replaces the former Bulletin S-95. Ask your jobber or write us for a copy. Current Catalog is No. 42.

H&C

HART & COOLEY MANUFACTURING CO.

World's Largest Manufacturers of Registers, Grilles, Furnace Accessories

HOLLAND • MICHIGAN

Association Activities . . .

(*Continued from page* 119)

graduating from its public schools he attended Ohio State University, where he received his B.M.E. in 1925.

After six years service in the office of the State Architect and Engineer, Columbus, where he prepared designs and specifications of heating, ventilating, and plumbing systems for state buildings and institutions, he joined the teaching staff of Carnegie Tech. in 1931.

In that same year he became a member of ASHVE and served on the Council from 1936-38, inclusive. He was chairman of the Guide Publication Committee in 1942, and he has served on many of the research technical advisory committees including Weather Design Conditions, Air Flow in Ducts, and Instruments.

In Pittsburgh he took an active interest in the work of the Local Chapter of the ASHVE, and served as its president in 1942 and as a member of its Board of Governors in 1943.

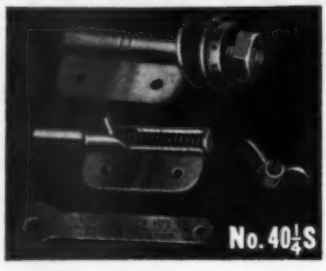
While still on the staff of Carnegie Tech., Mr. Humphreys acted as Director of the Society's Research Laboratory at Pittsburgh during part of 1942 and 1943 after the late Dr. Houghten was called into active service with the Navy.

His immediate field of activity at the Cleveland Laboratory will be concerned with the building of the new psychrometric rooms and the studies to be made on radiation and comfort.

◆

B. Arnold Perris has been made assistant to Managing Director George Boeddener of the **National Warm Air Heating and Air Conditioning Association**, Cleveland.

H&C DAMPER REGULATOR SETS

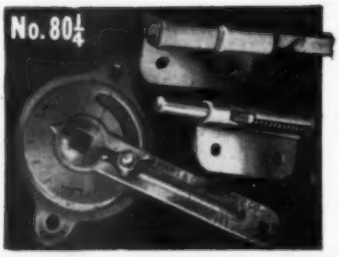


ECONOMY TYPE. Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with ¼" bearings.

LIST PRICE.....No. 40¼S.....$0.30

BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. Each set individually packaged.

LIST PRICES.....No. 50¼.....$0.40
No. 50⅜ $0.60



DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80¼.....$0.40
No. 80⅜.....$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. · PHILADELPHIA OFFICE: 1600 ARCH ST.

Here are pliers "Built like a Battleship"

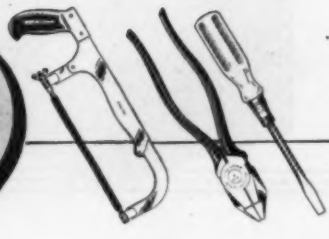
● And yet, when you hold them in your hand, their trim lines and balance remind you of a sleek destroyer. CRESCENT LINEMEN'S PLIERS were designed to meet the needs of linemen—to do heavy and steady work, fast, easily and accurately.

Rigid specifications, followed by correct design, good workmanship and relentless tests and inspections are standard practice in the making of every Crescent Plier. When we pack them for shipment, they are as perfect as Crescent's long experience can make them.

Most of these better Crescent Tools are still off to the wars, but one of these days, they'll be back on the counters of good hardware stores —everywhere.

CRESCENT TOOL COMPANY
Jamestown, New York

CRESCENT TOOLS
Give Wings to Work



New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 128.

181—Axial Fans and Blowers

Buffalo Turbine Corp., 2165 Bailey Avenue, Buffalo 11, N. Y., has released Bulletin 745 entitled "Buffalo Turbine High Pressure Axial Fans and Blowers" with a condensed description and typical performance curve and dimensions.

◆

182—Forging Pressure in Welding

Sciaky Bros., 4915 W. 67th St., Chicago 38, is distributing Bulletin 120-A, entitled "Use Forging Pressure in Your Welding Problems," illustrating and describing their new PMC01-9 projection welder. This 8-page bulletin covers the rating, performance, the principle, advantages, forging pressure, how it operates, adjustments, versatility, operation, electronic controls, equipment, head assembly, mechanical feature, and service available.

◆

183—Peroline Prevents Rusting in Storage

American Chemical Paint Company, Ambler, Pa., is distributing Technical Service Data Sheet No. 11-5-3 covering Perolines Nos. 1, 2 and 3—oil-like chemicals used to coat iron or steel products that are later to be painted, to prevent rusting in storage or transit. Peroline prevents rust developing under the oil film by reacting chemically with the metal. In preparing Peroline coated work for painting, it is necessary to remove the oil phase by vapor degreasing. The surface is so conditioned that paint adhesion and protection are obtained. Peroline is shipped in 10 and 52-gallon drums and in 1-gallon bottles.

184—Batten Type Roofs

Copper & Brass Research Association, 420 Lexington Avenue, New York 17, has just published a new monograph—"Batten Type Roofs." This monograph describes the methods of applying copper to roofs of residences, cathedrals, and public buildings using the batten type of construction. Similar work employing standing seam and flat seam types are covered by another monograph of this series. The batten type of roof is a favorite with architects in designing buildings with a mansard roof and is used in courthouses, hospitals, and school buildings.

The monograph contains a number of drawings on batten type roofs showing the proper method of installation of not only the roof itself but also flashings and the finish of gable ends.

◆

185—Practical Design for Arc Welding—Vol. 3

The Hobart Brothers Company, Hobart Square, Troy 1, Ohio, offers "Practical Design for Arc Welding," Volume 3, by Robert E. Kinkead. Cloth Bound, 8½ x 11, 200 pages. Price, $3.50.

In this third volume, in addition to more of the "idea stimulators" presented in the first two volumes, Mr. Kinkead has developed three different lines of thought of particular interest to welding designers and fabricators.

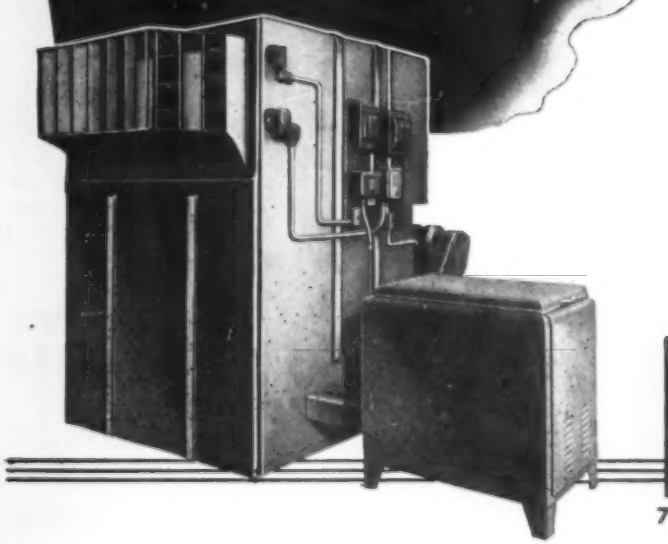
Twenty design plates show in graphic form valuable hints on what **NOT** to do in designing for arc welding.

In another twenty plates, Mr. Kinkead suggests the natural origin of many complex, modern design principles.

The final twenty plates show typical patents that have been granted in connection with the welding process, suggesting that the designer and fabricator of welded parts may be able to originate new methods that can be protected by patents.

Volumes 1 and 2 of "Practical Design for Arc Welding" are still available at $3.50 each; the 3-volume set being specially priced at $10.00.

Airtherm Direct-Fired Unit Heaters Give You Warm Air Heat Only Where and When You Want It!



You operate the Directherm Unit only those hours when you need heat—absolutely no waste of fuel due to stand-by loss. There is no danger of freeze-up when the unit is turned off over night.

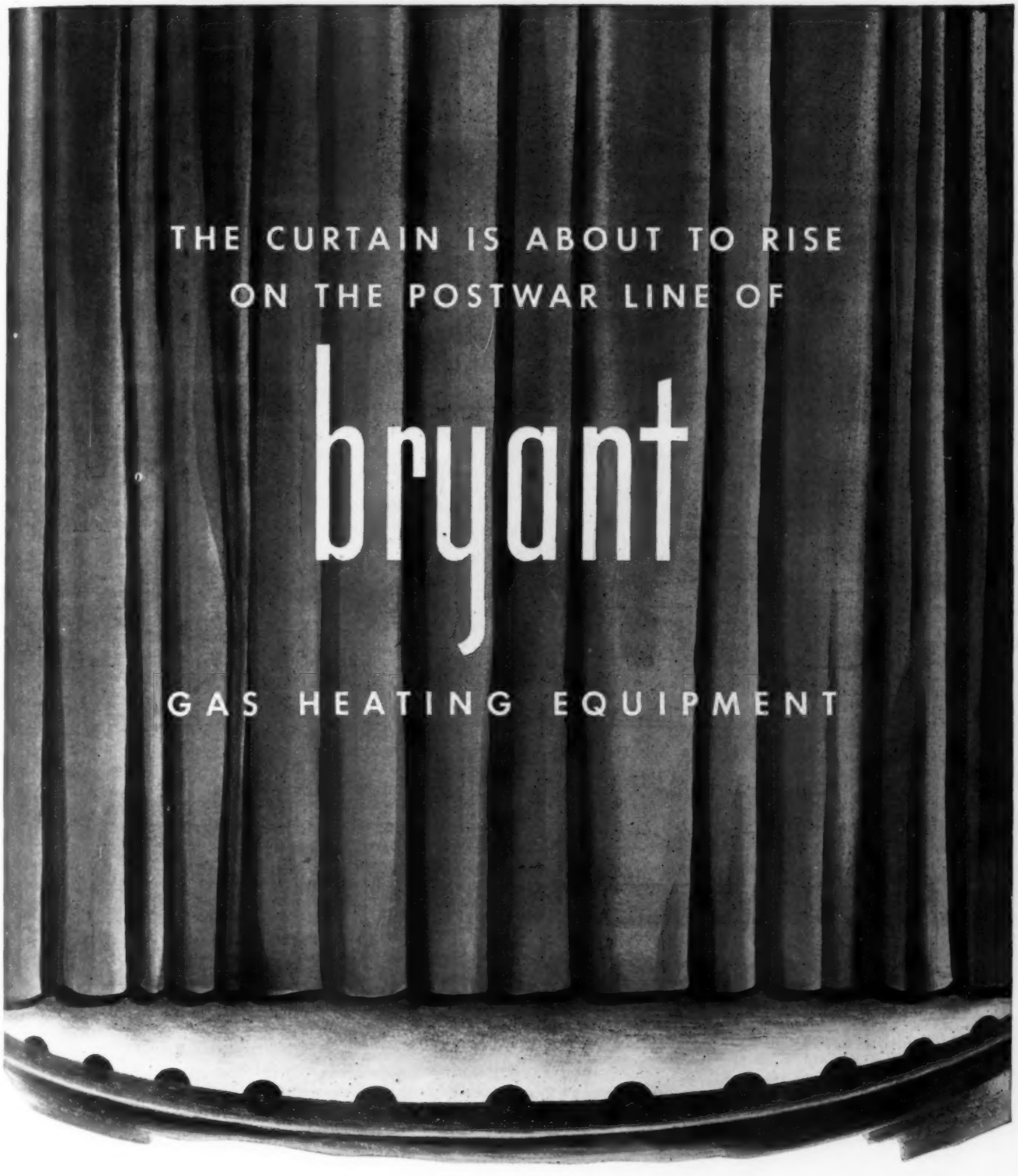
The Directherm Heater has a minimum number of parts, high efficiency on the combustion chamber, comparatively low outlet temperature, and a horizontal high velocity air stream with adjustable wide angle of warm air delivery. Can be adjusted to give you heat only *where* you want it, *when* you want it.

The Directherm Heater is scientifically built in 6 standard sizes with capacities from 300,000 to 1,500,000 BTU's.

Write today for bulletin giving complete details and specifications on this versatile, efficient heating unit.

AIRTHERM MANUFACTURING CO.

706 S. Spring Avenue St. Louis 10, Missou i



All facilities of Bryant Heater have been shifted to production of gas-fired heating equipment . . . to production of *the most complete line of gas heating equipment in the nation!*

In this new postwar line, soon to be unveiled in the pages of this magazine, you will find quality equipment with long-lived cast iron construction. There will be equipment of sturdy steel to meet the demand for less expensive installations. Modern automatic storage water heaters, unusual new wall and room heaters also will be included.

Not all demands can be filled immediately. For a while, peak production awaits a full flow of raw material, plus completion of our new manufacturing facilities. Write now so that your name may be added to the mailing list for the announcement of *the most complete line of gas heating equipment in the nation!*

BRYANT HEATER COMPANY, CLEVELAND, OHIO

One of the Dresser Industries

LET THE PUP BE FURNACE MAN

WITH A LONG AND CONTINUOUS RECORD OF SUCCESSFUL CONTRIBUTIONS TO THE VAPORIZING OIL BURNER INDUSTRY . . .

Now Announces **THE REVOLUTIONARY NEW**

magic pilot

FOR MAINTAINING A CONSTANT PILOT FEED INDEFINITELY

Improving . . .

the successful operation of Vaporizing Oil Burning Appliances has always occupied much of the engineering thinking at "A-P". As a result, manufacturers of this equipment have acquired the habit of coming to "A-P" with all their control problems. This has created an impressive list of "firsts" in the industry that have constantly offered the dealer *greater profit opportunities.*

HAS BEEN *First . . .*

- to offer Custom-Calibrated Metering
- to provide Control with the Viscosity Selector
- to furnish Control with Electric Conversion Top for Automatic Temperature Regulating
- to develop the "Oil Lifter" to pump oil from remote storage to heater
- to develop successful automatic control for Vaporizing Oil Burning Hot Water Heater
- to equip with Automatic Temperature Control, adding EXTRA profit-making devices without need for troublesome changes or adjustments.

NOW OFFERS the new "MAGIC PILOT" in the "A-P" Constant Level Oil Control — maintaining a *constant* pilot feed indefinitely.

Completely revolutionizing the automatic control of oil-burning water heaters, floor furnaces and furnaces, this new "A-P" MAGIC PILOT maintains a constant pilot flame indefinitely by automatically controlling the oil flow required by the low-burning pilot. The oil flow orifice prevents clogging and oil waxing.

Again, "A-P" advanced thinking and engineering provide new applications of automatic heat control — bring new markets, greater profits to manufacturers and dealers of vaporizing burning appliances. Write for bulletin describing the new, *service-free* "A-P" Oil Control with "MAGIC PILOT."

AUTOMATIC PRODUCTS COMPANY

2452 NORTH 32nd STREET • MILWAUKEE 10, WISCONSIN

DEPENDABLE *Oil Controls*

"A-P" CONTROLS ARE DESIGNED TO ELIMINATE SERVICING!

New Literature

For your convenience in obtaining copies of new literature use the coupon on this page.

186—Views in Sampsel Control Assembly

Sampsel Time Control, Inc., 600 North Strong Avenue, Spring Valley, Illinois, is distributing a four-page folder showing candid camera shots in their plant. Sampsel builds a complete line of controls for hand-fired furnaces.

187—Vibration in Industry

The Korfund Company, Inc., 48-15 Thirty-Second Place, Long Island City 1, N. Y., has just published a new 12-page bulletin entitled "Vibration in Industry—Its Effect and Control." The effects of vibration on plants, equipment and personnel, and methods of controlling vibration are explained.

◆

188—Heating, Conditioning for the Home

American Radiator & Standard Sanitary Corporation, Box 1226, Pittsburgh 30, Pa., is distributing a 48-page and cover catalog picturing their heating, winter air conditioning and plumbing equipment for the home—Sunbeam warm air winter air conditioners for coal, oil and gas.

◆

189—Strippits—Catalog S

Wales-Strippit Corporation, 345 Payne Avenue, North Tonawanda, N. Y., is disributing the second addition of Catalog S—Strippits (Spring Stripping Units) for stripping metal from conventional dies.

Strippits are self-contained and eliminate the necessity of removing dies from presses or disassembling to repair or replace broken or defective parts.

◆

190—Town of Tomorrow

The Bryant Heating Company, 17825 St. Clair Avenue, Cleveland 10, offers a 42-page and cover spirally bound booklet with "down-to-earth" views of the homes of tomorrow—photographic views, floor plans and facts. There are some two dozen homes of various types and sizes illustrated, with plans by various architects—all heated with Bryant automatic gas heating.

◆

191—Magic of Electronics

American Air Filter Company, Inc., First and Central Avenue, Louisville 8, Ky., is distributing a new booklet entitled "The Magic of Electronics on Air Filtration." Super clean air by way of electronics is discussed in theory and practice. AAF research and development in electronic air filtration is described. Another section of the sixteen-page booklet is devoted to what electronic super clean air means to industry.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

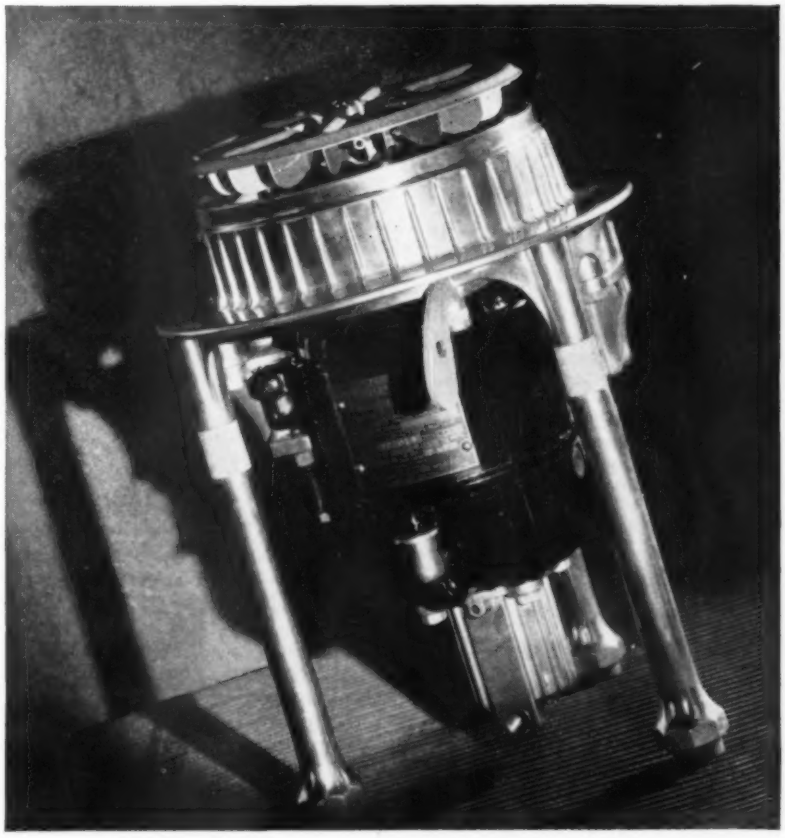
54	55	56	57	58	59
181	182	183	184	185	186
187	188	189	190	191	

Name .....
Company .....
Address .....

Are you Manufacturer——Jobber——Dealer——

New Star in the Firmament!

The TORIDHEET ROTARY BURNER



Oil rationing magnified its amazing economy and efficiency

In the most stiffly rationed areas with the toughest boards, users of Toridheet Rotary Burners never worried about fuel or temperature. Reports from users proved so uncannily uniform that dealer after dealer has come to us with the same verdict:

> *"Oil rationing has taught us more about Toridheet's amazing economy and efficiency than yards of talk. Users in our territory were not bothered by rationing or temperature. Now we're going to make a killing with Toridheet Rotary."*

Oil is no longer rationed but the lessons rationing taught are indisputably convincing . . . and valuable!

For further information get in touch with us now. Toridheet Rotary Oil Burners will soon be available. Early contact is advisable

TORIDHEET DIVISION

CLEVELAND STEEL PRODUCTS CORPORATION, CLEVELAND 2, OHIO

OIL BURNERS • OIL BURNER BOILERS • OIL WATER HEATERS
AIR CONDITIONING UNITS • COAL AND GAS FURNACES

Distributors Wanted for

Something NEW!

VITROLINER

BREECHING PIPE

(SMOKE PIPE)

VITROLINER is a new LONG LIFE breeching pipe for connecting heating plant to chimney and will give many years of trouble free service. Eliminates the expense and bother of frequent replacement. A complete line of fittings makes any hookup possible and can be easily and quickly installed. VITROLINER eliminates the fire hazard of corroded pipe. VITROLINER is made of heavy gauge steel completely coated inside and outside with porcelain to prevent corrosion. VITROLINER'S porcelain finish is attractive and adds to the beauty of any room.

SPECIAL FEATURES: The Telescope section of adjustable in length and is used to fill in any odd length not accommodated by standard lengths. Eliminates need for cutting pipe. Installed at chimney end of breeching pipe.

The Vitroliner damper section has a cleanout hole covered with a sliding sleeve. The cleanout hole is also used for installing a barometric or check damper. Small holes also provided for butterfly damper.

Vitroliner is easily installed and is ideal for venting dust, gas, corrosive fumes, paint spray, etc.

DISTRIBUTORS WANTED!

VITROLINER CHIMNEY LINER CREATES MORE DRAFT

The porcelain surface of the liner is smooth, even, and is quickly heated and cooled. In less than 5 minutes the temperature is up to efficient operating temperature, thus providing an excellent draft and complete combustion in the heating plant. When heating plant is off, the liner cools immediately, and there is no draft to draw heat from the house. The Vitroliner liner is not harmed by acid condensation present in oil or gas-fired plants.

VITROLINER LINER can be installed in existing chimneys, easily and quickly—prevents chimney deterioration caused by *condensation*. Inspection of thousands of brick chimneys proves that an acid resisting chimney lining is necessary to protect the brickwork.

VITROLINER CHIMNEY LINER is heavy gauge steel, double coated inside and outside with acid resisting porcelain fused into the steel at 1575° F.

VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT. Can be easily installed in straight or offset chimneys. All sections are made on dies and the bell and spigot joints insure an accurate and uniform fit.

Write for further information on sizes, prices, etc.

DISTRIBUTORS WANTED!

CONDENSATION ENGINEERING CORPORATION

122 S. Michigan Ave. Chicago 3, Illinois

With the Manufacturers

Lincoln Opens St. Louis Branch

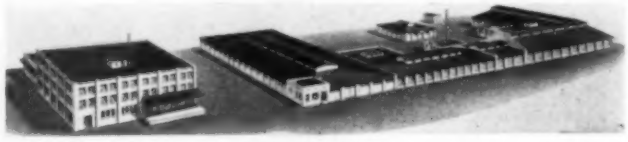
The Lincoln Electric Company, Cleveland 1, Ohio, announces the opening of a direct factory branch sales office in St. Louis. The new branch, under the direction of **B. J. Brugge** as welding engineer and district manager of sales and service, will be located at 4427 Manchester Avenue, with telephone number Newsteak 6516.

Mr. Brugge has been associated with The Lincoln Electric Company since 1931. For the past year Mr. Brugge has served The Lincoln Electric Company in the Detroit area in assisting firms in the design and fabrication of both war and post-war products.

◆

Ohio Valley Hardware Expands

Ohio Valley Hardware and Roofing Company, Evansville 2, Indiana, organized in 1910 and who wholesales hardware, roofing and sheet metal, is in new quarters with a three-story office building at 300 Fourth Avenue. One story buildings at 2000 Sixth Avenue will be used for



warehousing, sheet metal fabrication and limited manufacturing. The Sixth avenue group of buildings includes two large city blocks, giving a total of seven acres of space.

The company still holds leased warehouse space in other buildings not shown, and will continue to do so until March, 1946. Two of the major buildings of the Sixth Avenue group are leased for the duration of the war.

Roger K. Becker says old facilities had been outgrown for a number of years and this step co-ordinates activities into buildings of their own ownership. It is the intention to enlarge manufacturing facilities after the war.

◆

Obituary

Charles P. Russell, 52, of **Airtemp Division, Chrysler Corporation**, died in Detroit, July 30, after a short illness. Mr. Russell was staff engineer in the cooling department of the Airtemp Division, Dayton, at the time of his death. Funeral services were held August 2 at the Hamilton parlors, Detroit, and burial was at White Chapel cemetery.

Mr. Russell was a graduate of the University of Michigan; an airplane pilot in the First World War; in 1933 he joined the Chrysler corporation in Detroit, and shortly thereafter was transferred to Airtemp division in Dayton. He was a member of the American Society of Refrigerating Engineers.

◆

Charles K. Foster, director of the **American Radiator & Standard Sanitary Corporation** and for more than fifty years prominently associated with the heating industry, died in New York on July 28, 1945.

Mr. Foster was born in Detroit, Michigan, October 19, 1867 and joined the American Radiator Company at its formation in 1892. He was successively assistant secretary, general manager, sales, vice president in charge of sales, vice president and treasurer and executive vice president of the American Radiator Company. At the time of his retirement several years ago he was vice president of the American Radiator & Standard Sanitary Corporation. He was also a director of the American Steel Foundries Co. and the First National Bank of Chicago.

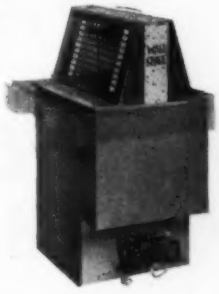
Mr. Foster's home was in Chicago. He is survived by his wife.

Will you get your share of KRESKY DEALER PROFITS?

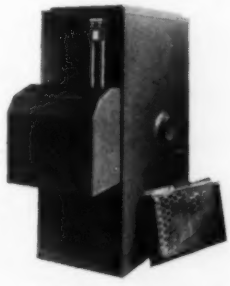
OIL heat should make greater strides than ever after the war and EXTRA sales mean extra profits. That's why distributors everywhere are looking into the KRESKY line now . . . making plans to round out their own line with KRESKY equipment.

First of all there's the KRESKY Floor Furnace, the *original* and still the only forced air oil-fired floor furnace bearing the Underwriters label. Then there's KRESKY range burners, presenting a huge opportunity for a conversion volume in some localities. Other items include the KRESKY forced air furnaces, water heaters and space heaters. All equipped with the patented KRESKY oil burner producing clean, economical, trouble-free heat.

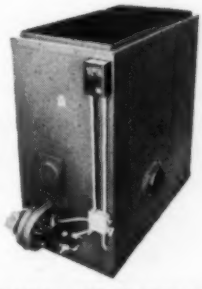
Look into KRESKY now. Write for full particulars on the attractive KRESKY Dealer Merchandising Plan.



FLOOR FURNACES



UTILITY HI-BOY



FORCED AIR FURNACES

WATER HEATERS

FOR CONVERTING WOOD AND COAL RANGES

ARMY NAVY
KRESKY OIL BURNERS
UNSURPASSED
PETALUMA CALIF. U.S.A.

Listed and Approved by Underwriters' Laboratories, Inc. To Burn No. 3 Oil (Diesel) or lighter

KRESKY
MANUFACTURING CO.

Pioneers in Oil Burning Equipment Since 1910

PETALUMA CALIFORNIA

OVER 75,000 KRESKY BURNERS INSTALLED

FOR VITALIZED HEAT

Convector HUMIDIFIER

In sizes to meet requirements of largest to smallest warm air furnaces. Now available for straight bonnets

When furnace check-ups reveal a need for humidifier replacement, or when new furnaces are indicated, install the Convector Automatic Humidifier. You not only make more money, you assure your customer more reliable and efficient humidification, even at low temperatures.

The Convector consists of one, two or four copper troughs built into a compact unit and fitted with highly absorbent patented evaporator pads, assuring free flow of moisture to exposed evaporating surfaces. This exclusive construction, together with the spacing of the troughs to permit unrestricted air flow, results in maximum evaporation.

Corrosion resisting materials. A non-back-siphoning automatic water feed valve, approved by National Plumbing Laboratory, guards against contamination of domestic water supply.

Convector models are now available for straight bonnets in fourteen sizes with single or multiple troughs from 15 to 34 inches. The units are easily installed and easily removed for servicing.

FURNACE MANUFACTURERS

On your new designs, hold up final specifications until you get the facts about our new, improved automatic humidifier. Send us your name so that full information can be sent to you as soon as specifications and materials are ready.

MAID-O'-MIST INC.

3213 North Pulaski Road
Chicago 41, Ill.

AUTOMATIC HUMIDIFIERS FOR ALL TYPES OF HEATING SYSTEMS

With the Manufacturers

Distributors Advisory Committee

Formation of a Distributors' Advisory Committee, representing 94 Herman Nelson distributors operating in 125 cities in all parts of the country, has been announced by Charles S. Stock, general sales manager of The Herman Nelson Corporation, Moline, East Moline and Chicago, Ill., manufacturer of heating and ventilating equipment. Current problems and policies, common to both distributors and the corporation, will be discussed at meetings of the committee with Herman Nelson officials.

Executives of five of the distributors, comprising the Advisory Committee held their first meeting in Moline with Herman Nelson sales executives on June 25 and 26. Members of the Committee are Sydney Hart, president, International Engineering & Supply Co., Providence, R. I.; Hugh E. Oliphant, president, Tay-Holbrook, Inc., San Francisco, Calif.; Linn B. Kester, vice president, Kester Machinery Co., Winston-Salem, N. C., and George P. Sherry, sales manager, Morrison Supply Co., Ft. Worth, Tex. All were present at the meeting.

Herman Nelson officials who outlined policies and discussed postwar plans with the committee were: R. W. Nelson, vice president; G. E. Otis, vice president; Charles S. Stock, general sales manager and Charles Wandas and Frank Tyler, product application engineers.

The advisory committee inspected Herman Nelson products and plant facilities. The second phase of the conference was the presentation of Herman Nelson's postwar distribution plans. At this time, sales potentials, quotas, advertising, prospect control methods and new products were discussed. Other matters of policy, such as stocking, pricing, discounts and billing were also considered.

Additional meetings with the Herman Nelson Distributors' Advisory Committee will be held periodically in the future. Proceedings of the first and subsequent conferences will be sent to all distributors.

◆

D. M. Kagey

D. M. Kagey, has been named sales manager of gas equipment for the heating division of **Gar Wood Industries, Inc.**, Detroit, according to Glen A. Bassett, president. Mr. Kagey had been the Gar Wood district representative in Michigan, Ohio, and Indiana from 1934 to 1942. During the past three years he was associated with a manufacturer of precision instruments

◆

D. A. Newton

D. A. Newton has joined the **F. J. Evans Engineering Company**, Birmingham, Alabama, with branch offices at Atlanta and Houston, as air-conditioning engineer of the heating and air conditioning division. Mr. Newton will make his headquarters at the Atlanta office.

The Evans organization engineers the installation of equipment manufactured by the **Surface Combustion Corporation**, Toledo 1, Ohio, which has developed the Kathabar method of humidity control for air conditioning systems. The Evans company also installs gas-fired winter air conditioning equipment for homes and commercial buildings.

Before joining the F. J. Evans Company, Newton was chief engineer of Larkin Coils, Inc., Atlanta, manufacturers of air conditioning equipment.

The Furnaceman's CHAMP

FIRELINE

Knocks Out Casting Shortages

Fireline has always been a champ at fixing firepots. But today it is more popular than ever. It knocks the current casting and labor shortages into a cocked hat. There's no shortage of Fireline. You can get all you want . . . without delay!

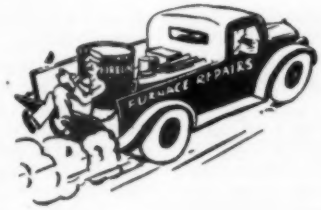
Fireline is quickly, easily installed through the furnace door. It seals cracked and broken firepots, stops leakage of gas, odors, and dirt into the building, and actually makes the old firepot a better heat producer and more efficient coal burner than a new one. It is also used to protect new castings.

Thousands of obsolete and broken down furnaces will need repairing this fall. With Fireline you can handle more repair jobs because it installs faster than a new casting. And it does the job better than a new firepot at a saving to the customer. Also at a higher profit percentage to you.

Do more work, build up your customer list for the future, and make more money —with Firêline.

FIRELINE STOVE & FURNACE LINING CO.

1816 Kingsbury St., (Dept. I), Chicago 14, Ill.



KEEP A DRUM ON THE TRUCK

Make every minute on the job count; avoid those unnecessary return trips to the shop. Keep a drum of Fireline on the truck, so you can go right to work on any job that turns up. Write for bulletins, prices, and name of nearest jobber.

TWO OTHER PRODUCTS YOU SHOULD KNOW

Ironset Asbestos Furnace Cement — The high-quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures; will not crack, shrink, bloat or blister. Makes your work more permanent. (And your customers, too.) Prove its superiority on your next job.

Fire Hearth Castable Refractory — The ideal material for setting stokers and building oil burner combustion chambers. Just mix and pour—then trowel it smooth. Conforms to any shape; air-setting; does not shrink, crack, or crumble.

FIRELINE STOVE & FURNACE LINING

With the Manufacturers

Appointment of **Robert W. Morgan** as chief engineer of **Fedders Manufacturing Co., Inc.**, Buffalo 7, N. Y., is announced by E. R. Walker, vice president. Mr. Morgan will direct all engineering activities at Fedders. His experience covers a broad variety of products in the heat transfer and general manufacturing fields.

Robert W. Morgan

◆

Vincent Brass & Copper Co., Inc., of Minneapolis, Minn., has recently named **Edmund T. Dowd** as manager of their control division. Before joining Vincent Brass, Mr. Dowd was sales engineer with Minneapolis-Honeywell for approximately nine years.

Vincent Brass is sole distributor in the Minnesota, No. Dakota, So. Dakota and parts of the northern Wisconsin territory for automatic controls built by **Penn Electric Switch Co.** of Goshen, Indiana.

◆

Wm. H. Kerr

William H. Kerr has become associated with the Stoker division of the **A. O. Smith Corp.** as district representative in the Chicago market.

Recently he was associated, as regional sales manager, with Holcomb & Hoke Mfg. Co. of Indianapolis, Ind. Earlier with the Whiting Corp. in their stoker department as a district representative.

J. P. Morley, president of **Bastian-Morley Co.**, Inc., LaPorte, Indiana—manufacturing Crane water heaters and Crane Basmor furnaces, distributed nationally by Crane Company, Chicago—announces changes and additions to personnel. Two additions have been made to the executive staff.

Ed J. Carey, with the company 23 years and for the past 13 years as west coast manager, becomes vice president and general manager.

Ray J. Rodier, who has been assistant to the president, having general direction of production, purchasing, inspection, personnel and engineering, is made vice president in charge of manufacturing.

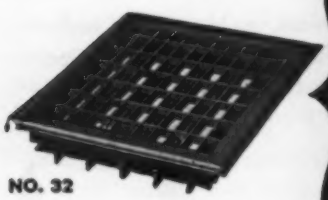
James V. Irvin, who served in the sales department for nearly ten years, and who organized the company's personnel department during the early stages of the war, is promoted to assistant to the president.

The Engineering Department has been augmented by a new chief engineer, two engineering specialists and four additional draftsmen.

Laurence T. Tegler, on the Bastian-Morley staff from 1938 to 1942, returns from the army to become chief engineer.

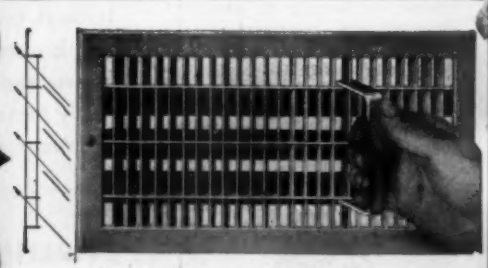
Paul H. Mortimer, assistant to Mr. Rodier, comes from Detroit Bevel Gear Co.

Frank H. Stockhausen, is a plastics engineer—a new position and department with the company.



NO. 32

INDEPENDENT
"Fabrikated"
REGISTERS • GRILLES
COLD AIR FACES



NO. 321A

ALWAYS LEADING—ALWAYS PROGRESSING

• Only products of proved dependability can attain leadership. The quality of INDEPENDENT "FABRIKATED" Grilles and Cold Air Faces is backed by 46 years of manufacturing experience in the register field.

Join the parade to greater post-Victory profits by concentrating on the extensive INDEPENDENT line to meet all requirements for air conditioning and warm air heating registers, cold air faces and grilles—all from one source of proved dependability.

No. 32, illustrated, is a "Fabrikated" register with multiple valves for use in the floor in furnace installations.

No. 321A wall grille with deflecting vanes is a directed air flow "Fabrikated" grille with bars that can be adjusted individually to direct air flow to the right, left or fanwise, as illustrated. Horizontal deflecting vanes in back may be individually adjusted to give upward or downward deflection of air flow.

Send for catalog showing the wide variety of the complete INDEPENDENT line with many improved exclusive features.

THE INDEPENDENT REGISTER CO.
3747 EAST 93RD STREET, CLEVELAND, OHIO

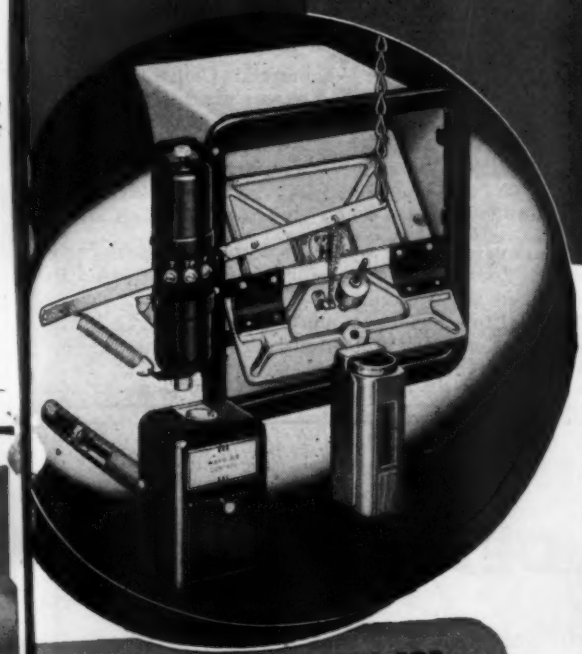
Help Customers Save That 20%

...and Increase Your Profits Selling the

Combustion Control Systems

EXCLUSIVE 2-POINT CONTROL

POINT No. 1
Draft Regulator Saves Coal Ordinarily Wasted in Heat Loss Up the Chimney



POINT No. 2
Damper Operator, under Thermostatic Control, Saves Coal Wasted by Hand Regulation

● With 20% less coal than last year, your prospects can't afford to take chances on "Ordinary damper regulator sets" *that do only half* the control job. Your big profit opportunity now is to sell them the Combustion Control System — with exclusive 2-point control — that automatically regulates both room temperature and draft over the fire for tested coal savings of as much as one ton out of every three.

WHAT EXCLUSIVE *2-Point Control* MEANS IN SALES . . .

You know the importance of reducing heat loss up the chimney. You know the advantage of handling the only system that's complete with a Draft Regulator. You also know how much easier it is to sell the only system that offers complete combustion control plus — the comfort and convenience of even, comfortable heat day and night, less frequent firing and fewer clinkers to remove.

Every householder with hand-fired heating is a prospect — and every prospect is looking for a way to keep warm and healthy this Winter on his reduced coal allowance. Write your heating equipment manufacturer today for his complete Merchandising Program to put you in the coal saving business.

WHY NOT USE THIS FEATURE TO SELL MORE NEW EQUIPMENT?

The same exclusive features that make the Combustion Control System the leader for profitable business in existing installations can help you make easier and more profitable sales of new furnaces and boilers. Ask your manufacturer to equip his products at the factory with Combustion Control Systems.

O OTHER CONTROL SYSTEM FOR AND-FIRED HEATING OFFERS THESE STED SALES ADVANTAGES . . .

ABSOLUTELY QUIET OPERATION — Only Combustion Control System features the nt, dependable Thermo-Draulic Damper Oper- r . . . no gears, cams or ratchets to become sy with age, no lubrication or attention neces- y. Advanced operating principle assures ng, trouble-free operation.

SELF-CONTAINED UNIT — Only the Com- stion Control System provides Damper Opera- and Draft Regulator as a self-contained unit t mounts directly on furnace. Installation is ier, chain runs are shorter — the whole job is gineered to the furnace, not an unrelated cessory.

APPROVED FAIL-SAFE DESIGN — Only the ombustion Control System provides absolute rotection against overheating hazards in case of ower failure. Entirely automatic, fire is checked hile current is off but control is resumed when ower is restored.

HIGHEST QUALITY CONTROLS — The Com- stion Control System provides the same high uality controls used on fine stokers and oil urners. There is no compromise with quality to eet a price — controls are designed and con- ructed to assure years of trouble-free operation.

Perfex
CORPORATION
500 W. OKLAHOMA AVENUE • MILWAUKEE 7, WISCONSIN

ACTURERS OF AUTOMATIC CONTROLS BEARING TRADE-MARK NAMES OF LEADING PRODUCERS OF HEATING EQUIPMENT

With the Manufacturers

Taylor Instrument Companies, Rochester 1, N. Y., announces the appointment of **Raymond E. Olson** as general sales manager to head up the various sales activities, both domestic and foreign. Mr. Olson joined Taylor in 1916 and after experience in both the sales and sales engineering departments, became manager of Sales Engineering. In October, 1944, he was elected to the Board of Directors.

Succeeding Mr. Olson as Sales engineering manager will be **Ralph E. Clarridge,** who came with the company in 1930.

◆

L. D. Linehan

R. H. Luscombe, sales manager, **Penn Electric Switch Co.,** Goshen Indiana, announces the addition of **Lester D. Linehan** as sales engineer for the company's Chicago office at 520 N. Michigan Ave. Linehan will work with **E. B. Maire,** manager of Penn's Chicago branch.

Mr. Linehan was a heating sales-engineer for 15 years for the Peoples Gas Company in Chicago. Previous to joining Penn, he was a field engineer for two years with U. S. Electrical Motors, Inc.

◆

Emil R. Wagner has resigned his position as buyer with the Wisco Hardware Company, Madison, Wisconsin, to become a partner of the **Jelco Milwaukee Co.,** Milwaukee, Wisconsin, distributors to the hardware retailers of Wisconsin and the northern penisula of Michigan.

Jelco Milwaukee Co. is moving into a new 4-story and basement warehouse and office building at 444 North Plankinton Avenue, Milwaukee. The company has been franchised to distribute Tru-Test merchandise.

Adam Leigh Smith, former Chief of the Fuel Burning Equipment Section of the Plumbing and Heating Division of the War Production Board, has been appointed eastern representative of **Stok-A-Fire Company, Inc.,** of St. Louis. Mr. Smith will also be in charge of governmental and foreign accounts.

Formerly Mr. Smith was president of the K & S Stoker Corporation of Middletown, New York, which distributed heating equipment in the southern New York Area.

A. L. Smith

◆

Minneapolis-Honeywell Regulator Company, 2726 Fourth Avenue South, Minneapolis 8, has formed the **Commercial Controls Department,** with **John E. Haines** as manager. Mr. Haines has been manager of the company's air conditioning controls division. He joined M-H in 1929. He is a member of the American Society of Heating and Ventilating Engineers.

John E. Haines

The Commercial Controls Department encompasses six sales divisions: Air Conditioning Controls Division, Moduflow Division, Railway Controls Division, Apartment Controls Division, Refrigeration Controls Division and the Aeronautical Division.

H. R. Canoyer has been promoted to sales manager of the Central Zone, with headquarters in Cleveland. Mr. Canoyer joined M-H in 1936.

M. S. Hamilton has been made sales manager of the Southeastern Zone, with headquarters in Atlanta. Mr. Hamilton joined the company in 1935.

IMPORTANT TO DEALERS:

Soon you'll be choosing a line of air conditioning units to sell. When you select a line of cooling equipment, you will have in mind Profit . . . Service Requirements . . . Simplicity of Installation . . . Consumer Satisfaction.

Jaden units qualify in every way—present dealers and thousands of users will tell you this.

If there is cold water in your territory, there's an opportunity with *Jaden* you should not overlook. Write for information in your territory.

Jaden

HASTINGS, NEBRASKA, U. S. A.

MANUFACTURERS OF AIR CONDITIONING EQUIPMENT

Part of Century's Complete Line of Air Conditioning Motors

BUILD MORE CUSTOMER GOOD WILL

with CENTURY'S COMPLETE LINE

of Air Conditioning Motors

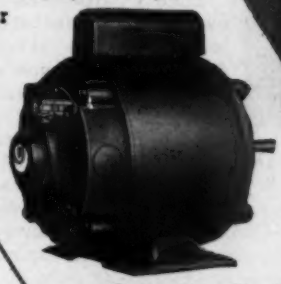
The complete line of Century Motors includes a wide range of types and sizes to meet the requirements of every air conditioning need. That gives you one source for all your motors — makes your buying job easier.

These motors provide your customers with air conditioning comfort — and create more good will for you — because they operate smoothly and quietly. Many features such as rigid construction, mechanical and electrical balance, contribute to the better performance of Century Motors.

Get the complete story on all the advantages of Century Motors — call in a Century engineer. His experience may prove valuable to you.

CENTURY ELECTRIC CO.
1806 Pine Street, St. Louis 3, Missouri

Split Phase Induction Motor — Built in sizes 1/20 to 1/4 horsepower



Capacitor Single Phase Induction Motor — Built in sizes 1/20 to 3/4 horsepower

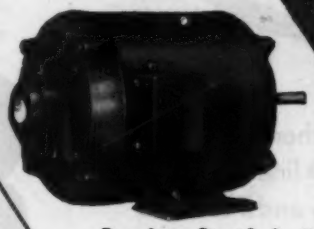
Squirrel Cage Polyphase Induction Motor — Built in sizes from 1/8 to 600 horsepower

Capacitor Motor — Built in sizes from 1 to 20 horsepower

Century C MOTORS

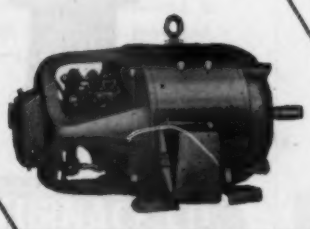
Offices and Stock Points in Principal Cities

Slip Ring Motor—Built in sizes from 1 to 200 horsepower

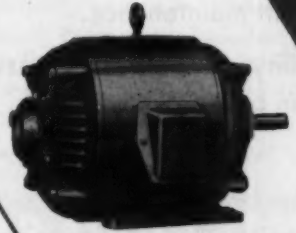


Repulsion Start Induction Motor —Built in sizes from 1/2 to 3/4 horsepower

Direct Current Motor—Built in sizes 1/20 to 3/4 horsepower



Direct Current Motor—Built in sizes from 1 to 300 horsepower



Repulsion Start Induction Motor — Built in sizes from 1 to 20 horsepower

With the Manufacturers

The Bishop & Babcock Mfg. Co., 4901 Hamilton Avenue, Cleveland 14, announces the appointment of **G. M. Craig Company**, 1607 Hennepin Avenue, Minneapolis 3, Minn., as sales representative for their complete line of Massachusetts fans, blowers, propeller fans, air washers and unit heaters.

◆

Howard C. Curran

Announcement of **Howard C. Curran's** appointment as midwestern district representative has just been made by **W. A. Matheson**, vice president in charge of the **Williams Oil-O-Matic Division, Eureka Vacuum Cleaner Company.** Mr. Curran's background includes 21 years of sales and advertising experience.

Immediately upon the completion of his training at the Oil-O-Matic home office and factory in Bloomington, Illinois, Mr. Curran will begin work in his territory. He will operate under the direction of C. W. Cornelssen.

◆

Carl P. Sorenson has recently been appointed consulting standards engineer for the **Cherry Rivet Company** of Los Angeles. Mr. Sorenson was formerly with the Glenn L. Martin Company of Baltimore. He has had broad experience in general engineering work.

◆

Appointment of **Russell A. Baker** as manager of the Syracuse branch office of the **Minneapolis-Honeywell Regulator Company**, Minneapolis, has been announced by C. B. Sweatt, vice president, succeeding Joseph W. Stevens. Mr. Baker joined Honeywell in March, 1935. In September, 1941, he was advanced to managership of the Davenport, Iowa, office.

◆

Joseph C. Cooper

Joseph C. Cooper has been appointed a New England district representative, according to an announcement by W. A. Matheson, vice president in charge of the **Williams Oil-O-Matic Division, Eureka Vacuum Cleaner Company.** Mr. Cooper's oil heating experience in the New England area dates back to 1925 when he joined Petroleum Heat & Power Company, as a salesman. In 1930 he went with Gilbert & Barker Manufacturing Company as a divisional sales manager. He has already completed the special district representative's training course at the Oil-O-Matic home office.

◆

K. E. Whitman

K. E. Whitman, formerly division manager of Hall Manufacturing Company of Cedar Rapids, has become associated with **Schelm Brothers, Inc.**, East Peoria, Illinois.

Schelm Brothers, Inc. have taken over the manufacture of Hall air cooling units, low temperature cabinets, furnace blowers and attic fans, and the company will maintain a Chicago Sales Office under the direction of Mr. Whitman, located in the North Shore National Bank Building at 1737 Howard Street, Chicago.

A newcomer in the air cooling and low temperature cabinet industry, Schelm Brothers, Inc. have been manufacturing trailer equipment and coaches for more than 40 years. They are starting production at once on the freezing cabinet which will be marketed as the Schelm "Polar-Freeze" —W. H. Schelm, president.

PEXTO

Comes through IN EMERGENCIES...

Every time

Through these . . . and other war years since 1785 . . . the PEXTO line of Sheet Metal Working Machinery and Tools has come through with flying colors . . . for fast and accurate production and vitally important maintenance.

This reliability will now be an asset in your civilian production.

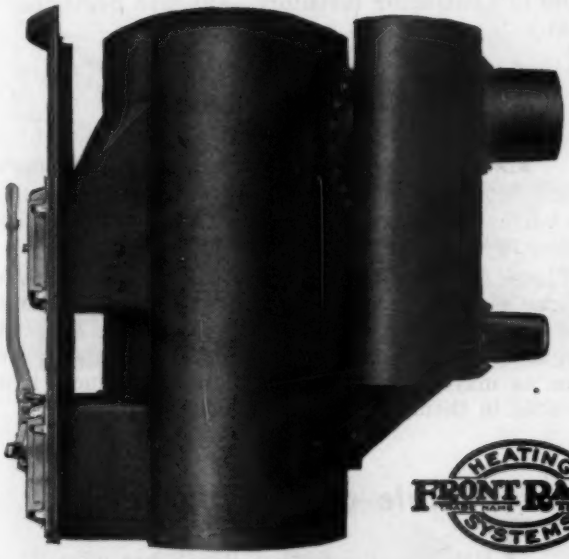
COMBINATION ROTARY MACHINE

THE PECK, STOW & WILCOX COMPANY — *Since 1785* — SOUTHINGTON, CONNECTICUT, U. S. A.

FRONT RANK'S

Ample Space Between Pouches

Serves 2 IMPORTANT FUNCTIONS!



HEATING FRONT RANK SYSTEMS

THE tremendous heat generated in a steel furnace would, if not quickly transferred to the surrounding air, soon melt the metal and cause heavy repairs as well as smoke, carbon monoxide gas and danger of fire.

It is necessary that all parts of the heated surface be properly ventilated by freely circulating air. This serves the double purpose of absorbing heat into the air to warm the home and cooling the surface of the furnace, preventing damage.

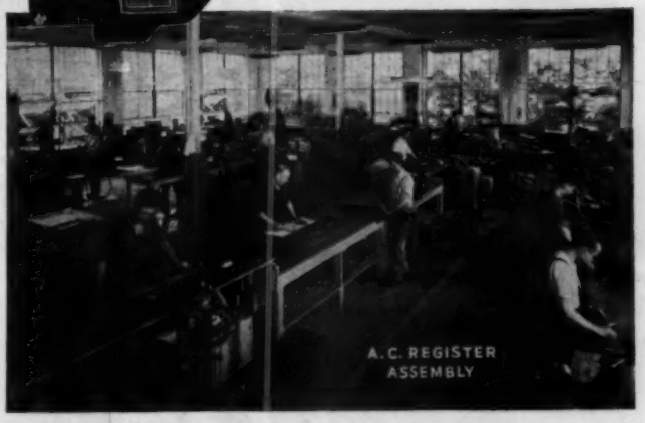
"Hot spots" where air does not readily reach the surface in sufficient volume to perform this double function are (1) under the feed pouch and above the ashpit pouch; (2) above the feed pouch where the casing is narrowed by the front.

On the FRONT RANK drum generous space is provided between the front and drum proper, both above and below the feed pouch. The top of the pouch is streamlined to induce currents of air to flow through the spaces provided, as is clearly shown in the above cut.

Member National Warm Air Heating and Air Conditioning Association.

FRONT RANK FURNACE CO.
DIVISION OF LIBERTY FOUNDRY CO
2500 OHIO AVE., ST. LOUIS 4, MO.

U.S. RECONVERTED for AIR-CONDITIONING REGISTER PRODUCTION



NO. 256 AIR-CONDITIONING REGISTER

A LEADER—PREWAR—WAR-TIME and WILL BE the LEADER—during the POST-WAR BOOM. The MOST Versatile and Efficient of A-C REGISTERS.

• • • •

Announcing STANDARD SIZES of AIR-CONDITIONING REGISTERS and INTAKES as approved by the CODE COMMITTEE of the National W. A. & A. C. ASS'N. Other Catalog Sizes are available from stock. Simplify and PROFIT with U. S. Products—The Industry's FINEST.

Numbers 103-153-256-249 will be Standard for POST-WAR.

Code Committee Approved Sizes—No. 7 Winter Air-Conditioning Manual.

Air Conditioning Registers	Floor Registers (when required)	Air Conditioning Intakes	Floor Faces (when required)
10 x 4	8 x 10	10 x 6	4 x 14
10 x 6			
	9 x 12	12 x 6	6 x 10
12 x 4			
12 x 6	10 x 12	14 x 6	6 x 12
14 x 4	12 x 14	24 x 6	6 x 14
14 x 6			6 x 30
		30 x 6	8 x 30

• • • •

Check your requirements with U. S. Catalog, 41 A. C. for Air-Conditioning Registers and Intakes.

For Special Contract Jobs—requiring other than Standard Sizes—the U. S. LINE is the Most Complete.

Our Catalogs No. 41A-C, 41G and 41F are still Current.

New Catalogs will be ready for 1946.

Put our Address on Your Source List.

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY

FUEL SHORTAGES AHEAD!

SELL *Fuel-Saving* G-A THERMOSTATS *Now!*

Gleason-Avery Thermostats can help your customers stretch their fuel supply, save on heating bills. Check these important Gleason-Avery advantages:

- ✓ Accurate, controlled heat on hand-fired heating systems.
- ✓ Easy reading and setting . . . through fingertip adjustments and synchronized settings.
- ✓ Quick, simple installation. G-A Damper Motor may be mounted in any position.
- ✓ Positive safety. G-A Damper Motor with exclusive Straight Line Control and Spring Return prevents overheating, eliminates troublesome sprockets and rotating arms.
- ✓ Lustrous, easy-to-clean Mirror-Lite finish blends with any decorative scheme.

Expected fuel shortages next winter can mean increased thermostat sales now. Customers *appreciate* G-A accuracy . . . dependability . . . economy (a G-A Thermostat usually pays for itself in fuel saving the first year). Direct orders accepted when accompanied by wholesaler's name.

No. 130 Furnace Sentry Unit Package for hand fired domestic heating plants, complete with thermostat, damper motor, and all accessories, ready to install.

LIST PRICE . . $19.50

Gleason-Avery, INC.
AUBURN, N. Y.
A RELIABLE NAME IN TEMPERATURE CONTROLS

News Summary

(*Continued from page* 78)

nels, these ceilings will apply to the retained inventory stocks of war goods.

Where there are no existing ceiling prices for such materials, sellers will follow simple formulas to arrive at their ceiling prices. The formulas differ, depending upon whether the materials are completed, only partially completed, or in raw state.

Provision is made so that OPA may establish special prices or exemptions where these inventory pricing provisions are not sufficiently tailor-made for a particular class of commodities.

Sellers will be required to supply invoices to purchasers on all contractor inventory sales.

(Supplementary Order 130—Maximum Prices for Sales of Contractor Inventory—effective September 5, 1945.)

◆

CMP Reg. 10 Revoked

BECAUSE controls over the production of Class A products in wartime labor shortage areas are no longer necessary, Controlled Materials Plan Regulation 10 was revoked Aug. 31 by the WPB.

Class A products are those which contain steel, copper or aluminum fabricated or assembled beyond the forms and shapes specified in Schedule I of CMP Regulation 1, other than such steel, copper or aluminum as may be contained in Class B products incorporated in them as parts or subassemblies.

◆

Scale of "Surpluses"

THE War Production Board has officially removed the restrictions on special sales of most but not all idle, excess and surplus materials. Special sales are by persons who acquired or made the materials for use and not for sale or resale.

Through revision of priorities Regulation 13, nearly all materials in contract termination inventories may now be sold freely and may be used for any permitted civilian production. However, special sales of certain scarce material (none we use) are still restricted in the regulation. Moreover, buyers may not use materials acquired under Priorities Regulation 13 in violation of any of the remaining orders of WPB limiting or prohibiting the use of any particular material, or limiting the amount they may receive, or the amount of any product they may make.

The disposal of contractor termination inventories and Government surpluses are still subject to regulations of the Surplus Property Board.

◆

Effect of Poor Bonnets

(*Continued from page* 96)

that a better type of bonnet will cure the trouble.

In the case of a bonnet which is too low, it may be possible to build a high plenum to compel the warm air from the furnace to mix completely in the plenum before air passes into the leader pipes.

SELL *Humidified Air*
with the *Skuttle*
AUTOMATIC HUMIDIFIERS

SERIES 300

Furnace manufacturers and dealers who recognize the importance of moisture in the home, find the Skuttle Model 300 Series Automatic Humidifiers ideal for any type or size of home. It features the adjustable rear support, adjustable collar, large inspection door and a size range from 18″ to 30″.

For full information and prices write today!

517 E. LARNED — *Skuttle Mfg. Co.* — DETROIT 26, MICH.

E. L. PAYNE, *President*

YES, WE'RE MAKING FURNACES AGAIN!

For three years, we've concentrated on war production. But now, reconversion! . . . in limited volume at first, increasing as available materials permit. ★ Continuing under the same management, but better-equipped in every respect . . . we reaffirm our 30-year standards of design, quality and performance. PAYNE Furnaces will continue to meet the highest expectations of gas companies, dealers and the public.

We shall allocate, fairly and equably, any production of: FLOOR FURNACES • DUPLEX FURNACES • "SENTRY" • "ZONEAIR" and "SPACESAVER" FORCED-AIR UNITS • GRAVITY MODELS • PAYNE "A" VENT and other products.

PAYNE ZONE-CONDITIONING ... successor to old-fashioned central heating. Request *FREE* booklet.

PAYNE FURNACE COMPANY
(One of the DRESSER Industries)
BEVERLY HILLS, CALIFORNIA

PAYNEHEAT
OVER 30 YEARS OF LEADERSHIP

Partnership Or Corporation

(*Continued from page* 71)

Entering New Fields

The ability of a company to move into new fields of activity depends, to some extent at least, on the form of its business organization. Shifting economic conditions, changes in consumer demand, developments of new materials, new techniques, new products—all place a premium on flexibility. A corporation sometimes has to worry about the possibility of the new activity being considered outside the scope of the business purposes specified in the corporate charter—what lawyers call "ultra vires." But this is a danger easily overcome, either by a broad definition of business purposes included in the original articles of incorporation, or by subsequent amendment, which is not very difficult to accomplish.

A partnership or individual proprietorship may, of course, go into practically any field it chooses without fear of exceeding its authority.

New Capital

One of the greatest advantages of the corporate form is the relative ease with which it can enlist new capital. All that is necessary is to find purchasers for additional shares of stock. Of course, the total stock outstanding can at no time exceed the amount authorized by the corporate charter (if additional issues are desirable, the state must assent to the increase).

A partnership, on the other hand, is limited in its search for new equity capital to additional amounts which may be invested by its existing partners. If those amounts are not sufficient, the partnership must usually either resort to borrowing or form an entirely new partnership by admitting one or more new partners with the requisite capital.

Sharing Profits

Partnership profits are distributable in accordance with the ratios set forth in the partnership agreement. (The relative burden of losses should also be specified in that agreement.) It is not necessary that this proportionate distribution bear any relation to the amounts of capital contributed by each partner. The ratios may be purely arbitrary, recognizing that a partner's contribution to the success of the enterprise may be greatly disproporitionate to his capital investment.

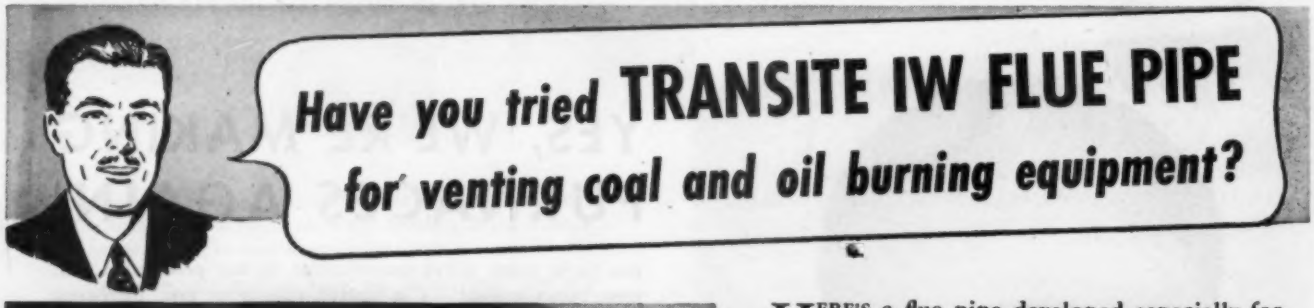
Corporate profits, on the other hand, must be distributed strictly according to the stockholder's proportionate ownership of the particular kind of stock on which a dividend is declared. Moreover, certain formalities must be observed before any distribution may legally be made. The board of directors must vote to pay the dividend, in a specific amount, to stockholders of record as of a specified date, and must also set the date for actual payment. This action must be recorded in the minutes of the directors' meeting.

A dividend, unless labeled a liquidating dividend, must not impair the corporation's capital, and the directors are ordinarily personally responsible for seeing that it does not do so.

Summary

Summary. It is clear that, in terms of legal consequences, there can be no pat answer to the question of what form of business is preferable. Each form has its advantages, each its disadvantages. The correct one to choose depends upon a consideration of all factors, not just one or two. It is possible that a tentative decision based on legal angles will be completely reversed when the tax consequences of that decision are weighed.

(To be discussed in Article 2)



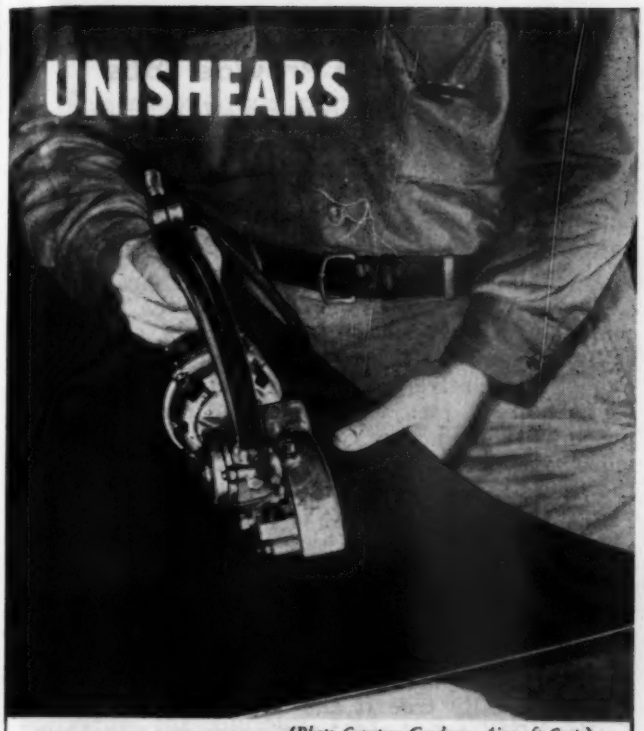
HERE'S a flue pipe developed especially for venting coal and oil burning domestic heating equipment. A Johns-Manville asbestos-cement product, it is strong, durable and *completely rustproof.* Yet Transite IW is light in weight, easy to handle and install. You can cut it to fit right on the job.

Transite IW Flue Pipe is available in a wide range of sizes, with a complete line of fittings. Why not give it a try? At your distributor's—or write Johns-Manville, 22 E. 40th Street, New York 16, N.Y., for details.

And for venting gas burning equipment...

Use *Standard* Transite Flue Pipe. Companion product to Transite IW, it offers the same outstanding advantages and is available at your distributors.

Johns-Manville
Transite IW Flue Pipe



(*Photo Courtesy Goodyear Aircraft Corp.*)

. . . Really "Get Around"

. . . in more ways than one! For example, Model 16A, shown cutting sheet metal in airplane manufacture, "gets around" to all corners of the shop because it's lightweight, portable – can be plugged into any outlet. And besides straight line cutting, it "gets around" curves and angles cleanly with hairline accuracy . . . cuts up to 16 gauge hot rolled steel 15 feet per minute as fed. Pivoted handle assures easy use in awkward positions . . . safety features make it foolproof.

Model 16A and other Unishears are paying their own way in many sheet metal shops by boosting output, lowering costs. There's a Unishear that will fit *your* sheet metal cutting problem. Why not ask your distributor? Stanley Electric Tools, Division of The Stanley Works, New Britain, Connecticut.

STANLEY

STANLEY UNISHEARS

Electrically Driven Metal Shears

Be a Blower Dealer for

QUICK PROFITS

$50 or more profit for you on every installation

NOW...EVERY GRAVITY FURNACE OWNER A PROSPECTIVE CUSTOMER

Plan to be an aggressive Blower Dealer and cash in on the tremendous market for Blowers. There's ready profit for you because Viking Blower-Filter installations mean profits of $50 or more per installation, and they will come mighty often now that priorities are removed. That is why so many furnace men are becoming aggressive Viking Blower dealers ready to cash in on Winter Air Conditioning needs of their customers.

BLOWER SELLING MADE EASY!

★ **Learn what Winter Air Conditioning really is and how to sell it. Get your own copy of our informative house organ "The Conditioner".**

★ **Planning file, sales and educational literature are yours to help turn leads into cash customers.**

SEND COUPON *TODAY!*

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Dept. AA-7
5600 Walworth Avenue
Cleveland 2, Ohio

Please send at once back issues of "The Conditioner" and Educational Literature.

Name _____

Address _____

City _____ State _____

Viking

IN PEACETIME, PRODUCERS OF
VENTILATORS
ATTIC FANS
BLOWERS
HUMIDIFIERS

AIR CONDITIONING CORP. 5600 WALWORTH AVE. CLEVELAND 2, OHIO

Partnership Or Corporation

(*Continued from page* 71)

Entering New Fields

The ability of a company to move into new fields of activity depends, to some extent at least, on the form of its business organization. Shifting economic conditions, changes in consumer demand, developments of new materials, new techniques, new products—all place a premium on flexibility. A corporation sometimes has to worry about the possibility of the new activity being considered outside the scope of the business purposes specified in the corporate charter—what lawyers call "ultra vires." But this is a danger easily overcome, either by a broad definition of business purposes included in the original articles of incorporation, or by subsequent amendment, which is not very difficult to accomplish.

A partnership or individual proprietorship may, of course, go into practically any field it chooses without fear of exceeding its authority.

New Capital

One of the greatest advantages of the corporate form is the relative ease with which it can enlist new capital. All that is necessary is to find purchasers for additional shares of stock. Of course, the total stock outstanding can at no time exceed the amount authorized by the corporate charter (if additional issues are desirable, the state must assent to the increase).

A partnership, on the other hand, is limited in its search for new equity capital to additional amounts which may be invested by its existing partners. If those amounts are not sufficient, the partnership must usually either resort to borrowing or form an entirely new partnership by admitting one or more new partners with the requisite capital.

Sharing Profits

Partnership profits are distributable in accordance with the ratios set forth in the partnership agreement. (The relative burden of losses should also be specified in that agreement.) It is not necessary that this proportionate distribution bear any relation to the amounts of capital contributed by each partner. The ratios may be purely arbitrary, recognizing that a partner's contribution to the success of the enterprise may be greatly disproporitionate to his capital investment.

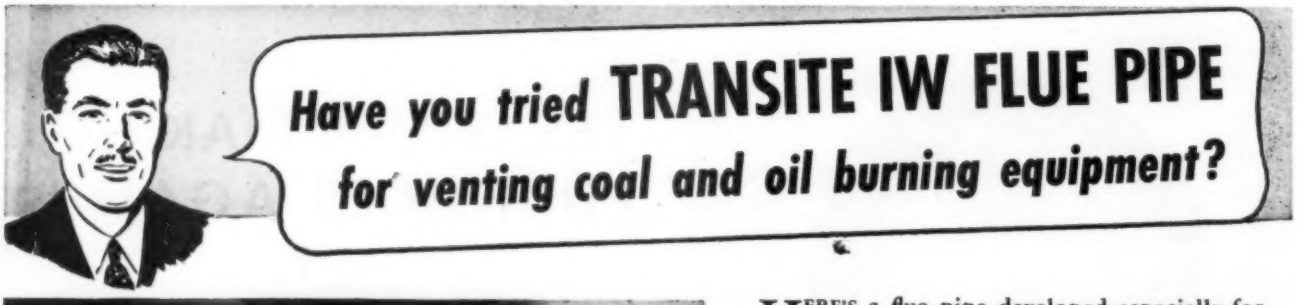
Corporate profits, on the other hand, must be distributed strictly according to the stockholder's proportionate ownership of the particular kind of stock on which a dividend is declared. Moreover, certain formalities must be observed before any distribution may legally be made. The board of directors must vote to pay the dividend, in a specific amount, to stockholders of record as of a specified date, and must also set the date for actual payment. This action must be recorded in the minutes of the directors' meeting.

A dividend, unless labeled a liquidating dividend, must not impair the corporation's capital, and the directors are ordinarily personally responsible for seeing that it does not do so.

Summary

Summary. It is clear that, in terms of legal consequences, there can be no pat answer to the question of what form of business is preferable. Each form has its advantages, each its disadvantages. The correct one to choose depends upon a consideration of all factors, not just one or two. It is possible that a tentative decision based on legal angles will be completely reversed when the tax consequences of that decision are weighed.

(To be discussed in Article 2)



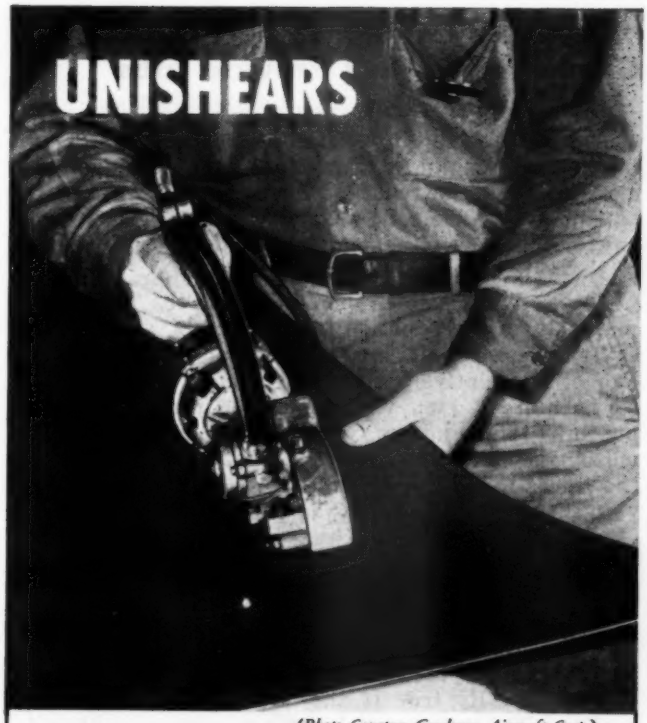
HERE'S a flue pipe developed especially for venting coal and oil burning domestic heating equipment. A Johns-Manville asbestos-cement product, it is strong, durable and *completely rustproof.* Yet Transite IW is light in weight, easy to handle and install. You can cut it to fit right on the job.

Transite IW Flue Pipe is available in a wide range of sizes, with a complete line of fittings. Why not give it a try? At your distributor's—or write Johns-Manville, 22 E. 40th Street, New York 16, N.Y., for details.

And for venting gas burning equipment...

Use *Standard* Transite Flue Pipe. Companion product to Transite IW, it offers the same outstanding advantages and is available at your distributors.

Johns-Manville
Transite IW Flue Pipe



(Photo Courtesy Goodyear Aircraft Corp.)

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$50 or more profit for you on every installation

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Plan to be an aggressive Blower Dealer and cash in on the tremendous market for Blowers. There's ready profit for you because Viking Blower-Filter installations mean profits of $50 or more per installation, and they will come mighty often now that priorities are removed. That is why so many furnace men are becoming aggressive Viking Blower dealers ready to cash in on Winter Air Conditioning needs of their customers.

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Sampsel

DAY-NIGHT THERMOSTAT
with ELECTRIC CLOCK

Strong permanent magnets definitely snap the contact points into position when the clock action brings them close together. Arcing and chattering are thereby prevented. This is one of the many features of Sampsel Day-Night Thermostats and further proof of Sampsel's advanced engineering and fine construction.

Ideal for use with any type of fuel oil, gas or coal heating system. Automatically maintains different day and night temperature levels.

Complete Sampsel Control Catalog on request.

SAMPSEL TIME CONTROL, INC.
SPRING VALLEY, ILLINOIS

Sampsel
AUTOMATIC CONTROLS

If Business Can't Government Must Provide Jobs

(*Continued from page* 74)

sales decline is said to be lack of consumer purchasing power. By increasing this purchasing power, more goods can be sold and hence more persons will be employed. The conclusion from this logic is that any method of increasing buying power, even that of the public deficit, is justified.

The first point to be noted is that the payments made during production govern costs and hence selling price. If costs are high because of high wages and other relatively large payments for materials, rent, interest, etc., the productive process should put into the hands of workers and others enough money income to enable them to buy the product at the prices asked.

But workers and others are free agents as consumers. They may decide that the article, for which they or someone else were paid a high wage to produce, is not worth the price. When the sales of a particular article begin to drop, it is not necessarily because of a lack of purchasing power. It may be that fewer people want it at the price asked. This may be equally true if the sales of many articles decline. The effect of creating more purchasing power by means of deficits is to induce a revaluation of the relative importance of money and goods. By pumping enough additional money into the economic system, and thereby lowering the relative importance of the dollar, the price tags on merchandise become less significant. There would be less reluctance to paying $10 for a $3 hat, $25 for a $7 pair of shoes, 50 cents for a 10 cent hamburger, and so on.

This is the technique of inflation. There is no easy road back from the first stage of inflation, and in due course there would be the same symptom of a relative lack of purchasing power at the new level. Temporary relief could again be obtained by injecting another, and larger dose, of purchasing power, and so on until the collapse of the monetary unit forced, in one swoop, the liquidation and readjustment which the inflationary process had to that point been successful in delaying.

Such is the logical outcome of any attempt by government to step in and give employment on a large scale under circumstances where private employers are not doing it. Since the public employment can hardly ever be more efficient than private employment is likely to be, the only way by which government can get away with it is through inflation.

War Production Is Waste

It is often said that because, during the war, production and incomes were raised to unprecedented levels, therefore it can be done during peace. Another version is that the war has shown the way to utilize fully manpower and resources, that it has demonstrated the minor position of finance, and that we should stop worrying about where the money is coming from.

Against the high war production must be set the war wastage. This production does not mean more goods for the people, but more goods to be used up in combat. It means a phenomenal rate of depletion of nonreplaceable natural resources. Moreover, it means production determined, not by the market, but by one purchaser, the government, whose need

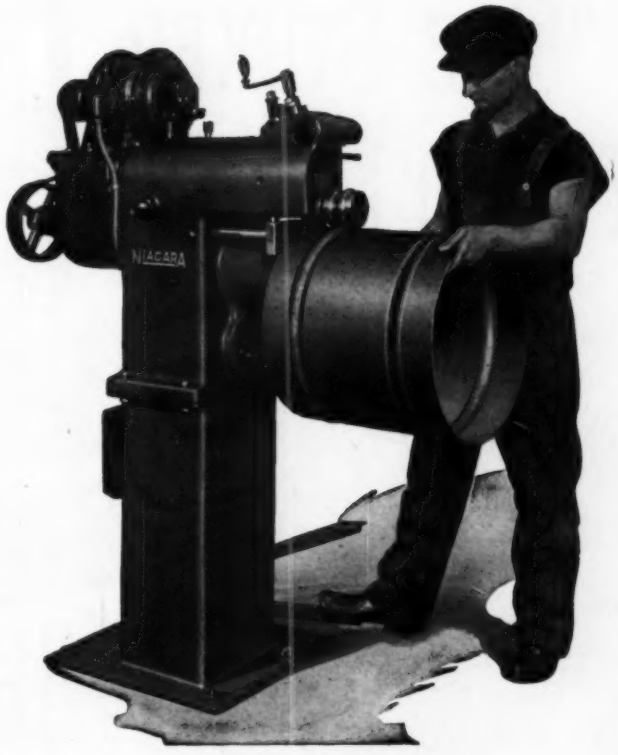
This motor driven combination machine with interchangeable rolls combines power operation, ability to handle heavy gage work, and easy operation.

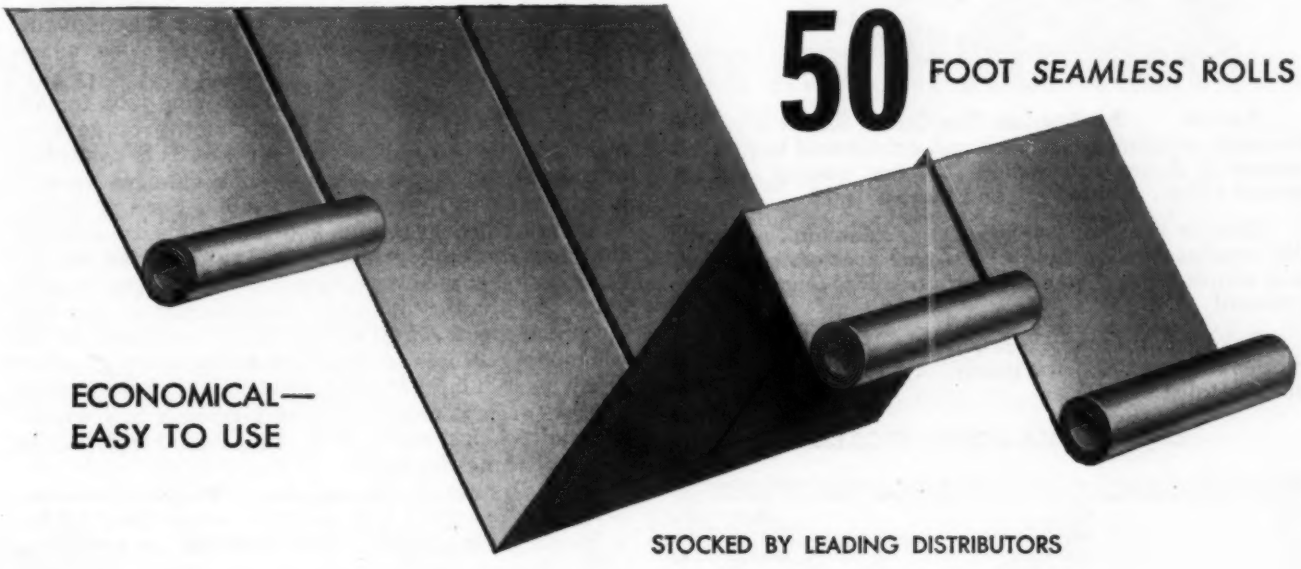
Foot control of clutch and upper roll allows the use of both hands for holding and guiding the work.

Interchangeable rolls make one machine capable of burring, turning, wiring, beading, crimping, flanging, slitting and circle cutting. Beading and crimping can be done in one operation.

Gears and shafts are enclosed. Gear box contains intermediate gears and clutch, all running in oil. Clutch gives instant hand and foot control and can be locked for continuous operation.

Write for Bulletin 75A. NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y. District Offices: Detroit, Cleveland, New York.





50 FOOT *SEAMLESS* ROLLS

ECONOMICAL—
EASY TO USE

STOCKED BY LEADING DISTRIBUTORS

FOLLANSBEE *SEAMLESS* TERNE ROLL ROOFING

No cross-seaming means substantial savings in time and solder—speeds up the job and steps up profits. Easy to cut to lengths required—ideal for gutters and valleys.

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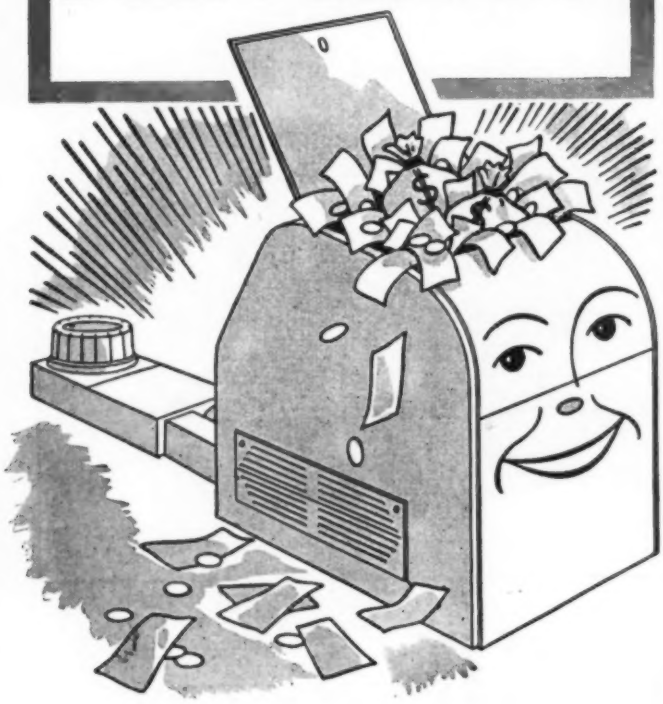
ALLOY BLOOMS & BILLETS, SHEETS & STRIP • CLAD METALS • COLD ROLLED CARBON SHEETS & STRIP
POLISHED BLUE SHEETS • ELECTRICAL SHEETS & STRIP • SEAMLESS TERNE ROLL ROOFING

"THE STOKER FULL O' MONEY!"



Yes sir . . . the Peerless Fire-Guard Stoker is a real financial windfall. Designed and engineered to give the utmost in Stoker satisfaction . . . this quality product means sales . . . sales . . . and more sales! !

They're real honest-to-goodness sales too . . . for all the prestige and backing of the vast Peerless organization stands behind you . . . and each Fire-Guard Stoker you sell!

Take advantage of a few choice and exclusive territories still open . . . wire, phone, or write today for complete details!

PEERLESS FIRE-GUARD STOKERS

Peerless

MANUFACTURING CORPORATION

INCORPORATED

LOUISVILLE, KENTUCKY

SINCE 1884

is regulated by the scope and intensity of the war effort. If trucks, for example, were used up as rapidly on the farm and the highway as they are on the battlefield, then production of trucks would need to continue at the wartime rate. The same would be true if it were airplanes, or clothing or any other kind of equipment.

But this is not the case, fortunately, else our reserves of natural resources would very soon be gone. The urgency to produce any commodity after the war will depend on the quantity that consumers will buy and the price at which it can be sold. The peacetime production problem is to devise and produce the articles that consumers will buy.

It is all very well to shrug off the question of where the money is coming from as of no importance, but the realization becomes stronger daily that the postwar debt will be no laughing matter. Enough of the money for war production has come from loans to give rise to sober reflections about the interest burden, the integrity of the redemption medium, and the future of the government's credit. The very level of the postwar debt should induce caution in the promises of government aid and support which will involve, if carried out, still further additions.

Nevertheless, there remains the wholly laudable purpose of keeping people at work, that is, of providing jobs. What can government do, other than engaging in a vast inflation, to promote the achievement of this goal?

This writer believes that government can and should develop its policy along another line. To begin with, when private business cannot or will not provide employment, there is usually a reason. If the cause or causes are removed, the jobs will reappear. Instead of making the kind of promise that is made about what government will do to give jobs, a far more sensible policy would be to say that when private business cannot or will not provide jobs for all who are willing to work, every facility of government will be utilized to find out why this condition exists and to aid in effecting such changes as will eliminate it as quickly as possible. Such a policy would rest on the sound and defensible foundation that private employment is the natural and wholesome way for people to earn a living. Given an efficient and intelligent public administration, the discovery and correction of the blocks and jams in the economic machinery should not involve too great delay, particularly if the governmental attitude were that of prompt action, honest diagnosis and wholehearted co-operation with private enterprise in accomplishing the result.

Such a policy is offered as a substitute for compensatory spending and all other inflationary tricks. It would leave the main responsibility for providing jobs where it belongs, namely on private business, and it would assign to government the kind of participation in the prevention of unemployment which government can reasonably be expected to undertake. The drawbacks of this proposal are, first, that it lacks the demagogic appeal of extravagant promises to take care of everybody, and second, that it involves serious, thoughtful self-examination by all parties—in business, labor and agriculture as well as in the government—if honest diagnosis and sound remedy were to be laid out. But it is surely time for a return to some of the civic and economic virtues as the basis for dealing with our great public problems.

The One Feature

YOU WILL NEED MOST WHEN YOUR NEW MODELS ARRIVE

Some day soon you will proudly display the new postwar models your customers have waited so long to see. They will have new styling and many new features to talk about. One feature you can depend on to get your share of business is Coordinated Automatic Heating — controls pre-selected for quality by your manufacturer and sold in combination with his product's features, under his trade name.

Controls are literally the heart of all automatic heating equipment. Upon their proper functioning depends the satisfaction your customers get from the equipment you sell. That is why most leading manufacturers choose Perfex as their source for pre-selected controls. They have learned that Perfex's advanced engineering and painstaking construction methods best reflect their own high traditions of quality.

LIMIT CONTROLS

Perfex Limit Controls provide superior safety performance through the exclusive Twin Contact Switch design. Magnetic acceleration and ample contact pressure insure long life and accuracy of calibration. The wiping action on each operation provides clean, positive contacts at all times.

Ask Your Manufacturer for Details of Perfex Limit Controls Used in "Coordinated Automatic Heating"

Perfex
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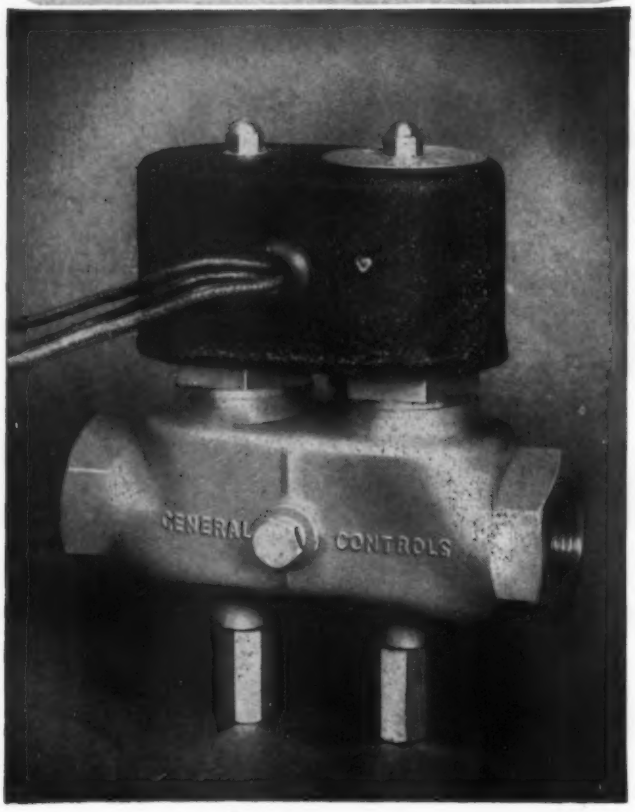
MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE-MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS

General Controls

HI-LOW-OFF

MAGNETIC GAS VALVE



SERIES D-40

D-40 is a current-failure 2-stage electro-magnetic gas valve used on many domestic and industrial applications where hi-low-off control is desired. Thermostatically controlled for constant temperature, low fire is adjustable to minimum flow of 8' per hour. Automatic thermopilots, limit controls, time clocks, etc., may be wired in series with this control, making it applicable to hot air furnaces, conversion burners, gas-fired boilers, etc. Solenoid coils are interchangeable.

HOW IT OPERATES

with Dual Thermostat T-70-6 or 7

Valve opens when energized, closes on current-failure, solenoid wires are color-identified, sequence of operation when used with dual thermostat: Assuming room temperature stands at 60° and thermostat is set at 70°, maximum gas flow is obtained. At 69° high-fire closes, leaving minimum gas flow which closes when 70° is reached. On down cycle, low-fire comes on first at 69° and if low-fire will not maintain heat loss, high-fire automatically comes on at approximately 67½°.

GENERAL CONTROLS

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Sales Possibilities In Packaged Blowers

(*Continued from page* 101)

fuel bills last year—ask him!" That's a strong argument!

If you don't believe a blower will cut fuel consumption here's a case our own company found in a typical dwelling: One blower user in Cleveland told us that forced air heating improved his oil-fired furnace so much that despite the tough fuel restrictions, he found to his surprise that he had 100 gallons of oil left at the end of the first season in which his blower had been in operation. "Why," he told us, "in two years my savings will pay for the cost of the blower and the installation. And in four years, my comfort will be *paying me!*"

Why all the saving? Well, mainly because a blower's mechanical power *carries the warm air away from the furnace at a much lower temperature.* Then, too, the slowly flowing warm air in a gravity system loses more of its heat on the way up through the pipes—forced air loses less than half the heat gravity does.

As an average, you save 25 per cent of the fuel you would use with a gravity furnace. In addition to the savings mentioned above, fire pots and grates and the furnace itself have a much longer life, mainly because you don't have to push your furnace nearly as much with a blower addition.

Clean, filtered air is another important selling point for a blower. Every blower is equipped with filters, which constantly act like a huge vacuum clean-

Brundage BLOWER FILTER PACKAGE UNITS

- CLEAN FILTERED AIR
- UNIFORM ROOM TEMPERATURES
- POSITIVE CIRCULATION
- EASILY INSTALLED
- ECONOMICALLY OPERATED
- SIZES TO MEET EVERY NEED

THE Brundage COMPANY

Blower Specialists Since 1919

KALAMAZOO 11, MICHIGAN

Northwestern

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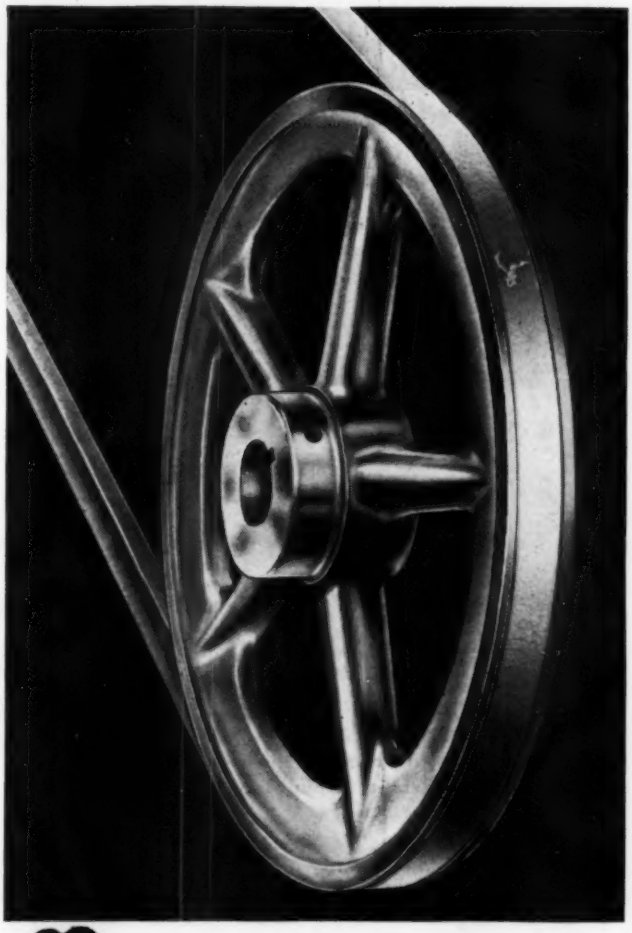
BEST REPAIR PARTS

Northwestern Repair Parts have proven again and again that they're the best for every furnace job.

Furnaces repaired with Northwestern parts during the war have had their lives doubled and their efficiency greatly increased.

Northwestern parts should be used in every repair job you do. Write us today. Quality is always the Northwestern watchword.

NORTHWESTERN STOVE REPAIR COMPANY
662 West Roosevelt Road, Chicago 7, Ill.



MAUREY V-PULLEYS

provide a L-O-N-G step toward TROUBLE FREE Performance

Our long experience in designing and manufacturing V-Pulleys, our complete understanding of their uses, and the finest materials—all are combined in making Maurey V-Pulleys the very best Pulley installations for Refrigeration and Air Conditioning systems as well as for Fans and Blowers.

For unfailing, continuous operation be sure to specify Maurey V-Pulleys.

MAUREY MANUFACTURING CORP.
2915 South Wabash Avenue
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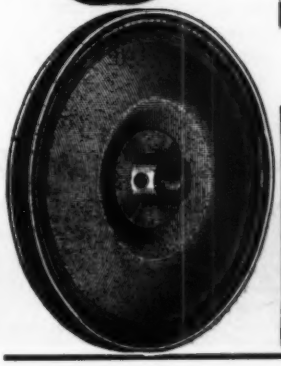
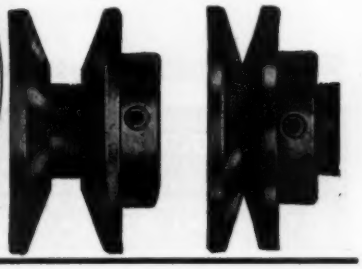
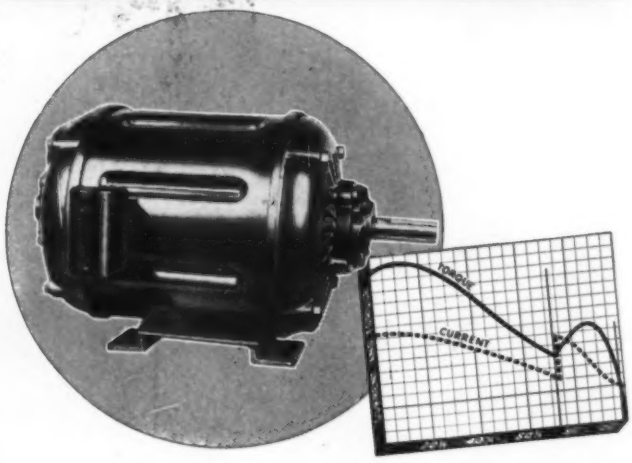




Users Benefit from
THE LONG LIFE, ECONOMY, AND DEPENDABILITY BUILT INTO
Wagner
TYPE RA MOTORS



WAGNER type RA (repulsion-start induction) motors give years of reliable, trouble-free service, because dependability is built into every motor.

Careful engineering has reduced wear, vibration and noise of operation to a minimum. Many important construction features such as sturdy welded steel stators and well-insulated windings securely held in place, add to the ruggedness of the motors without sacrificing compactness or efficiency.

Wagner type RA motors embody all the important improvements in single-phase motor design. This means that the user of RA motors gets the best motors for the job with long life and dependability built into every part.

Wagner type RA motors are truly "general purpose" motors because their applications are many. They are particularly suitable for driving machines with high inertia, machines involving excessive friction in starting, and, in general, loads requiring motors capable of exerting high starting-torque with relatively low starting-current.

RA motors are available in ⅛ to 15 hp; sleeve or ball-bearing; horizontal or vertical; open, dripproof, and totally enclosed; rigid, resilient, or flange mountings.

Wagner has 29 Sales and Service Branches ready to serve you — ATLANTA 3 • BALTIMORE 18 BOSTON 15 • BUFFALO 8 • CHICAGO 16 • CINCINNATI 10 CLEVELAND 15 • DALLAS 1 • DENVER 2 • DETROIT 2 HOUSTON 2 • INDIANAPOLIS 4 • KANSAS CITY 8 • LOS ANGELES 15 • MEMPHIS 3 • MILWAUKEE 2 • MINNEAPOLIS 4 NEW YORK 7 • OMAHA 2 • PHILADELPHIA 8 • PITTSBURGH 13 PORTLAND 9 • ST. LOUIS 3 • SALT LAKE CITY 1 • SAN FRANCISCO 3 • SEATTLE 4 • SYRACUSE 2 • TULSA 3 WASHINGTON, D. C. 5

For Complete Information write for **Bulletin MU-185**

M45-23A

Wagner Electric Corporation
ESTABLISHED 1891
6371 Plymouth Avenue, St. Louis 14, Mo., U. S. A.
In Canada: Wagner Electric at Leaside, Ontario
ELECTRICAL AND AUTOMOTIVE PRODUCTS

er. Every fifteen minutes, or perhaps more often, the entire volume of air is drawn through the filters. The filters remove all the street dirt, lint from clothes, lint from rugs and fabrics and also tracked in surface dirt. If you think this soot and dirt doesn't amount to much, just examine a filter after it has been in use for a while and realize that all the dirt the filter has caught would otherwise have returned to the rooms to be breathed by the inhabitants. This same dirt, of course, might have settled against the walls, drapes or furniture, or any other room object it could cling to. Therefore, besides being healthier, filtered forced air means less house cleaning and cleaner rooms.

There is another important health measure a blower offers. We all know that the human body is not built for drastic and sudden changes in temperature. That is why colds are prevalent when Fall turns to Winter and Spring to Summer, or why we get the "sniffles" when sitting in a cold or hot room. In a gravity heated home, where the floors are cold and certain rooms and areas excessively hot or cold, it stands to reason that family colds are a common occurrence. Naturally, an anti-cold guarantee can't be passed out for every blower installed. That common sickness depends largely upon an individual's resistance. But it is definitely logical that in a home with a forced air system, where the warm air is distributed evenly throughout all rooms, the *chances* of the inhabitants catching cold are less.

There you have the story of blowers—the silent "giant" with the four powerful sales punches: True Winter Indoor Comfort, Economy, Cleanliness and Health! Don't you agree now that blowers are worth pushing to sell?

The "comfort business" pays all year round when you sell
PALMER PRODUCTS

When it's hot . . .
SNO-BREZE
EVAPORATIVE COOLERS

horizontal blast blower type cooler

When it's cold
PALMER FURNACES
All sizes and types of coolers and gas furnaces. Write for free literature and prices.

suspended unit heater

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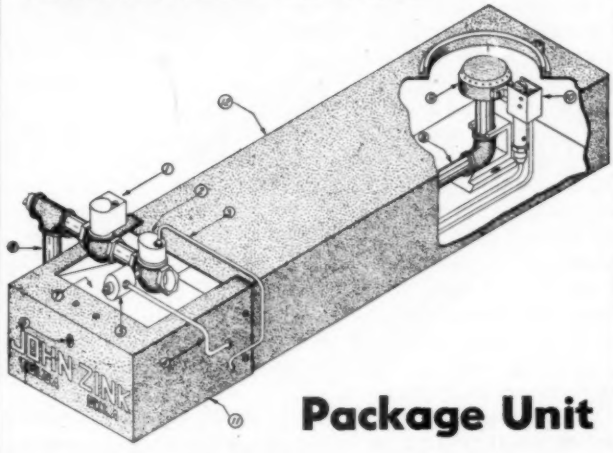
JOHN ZINK'S
Conversion Burner



Package Unit

Complete with Standard Pilot

AVAILABLE NOW

Series P-300	Series P-600
burns 175 cu. ft. of gas per hr.	burns 400 cu. ft. of gas per hr.
$17.50	**$19.50**

F.O.B. Tulsa, Oklahoma

FEATURES

- Applicable to 98% of all domestic furnaces, for new installations or conversions.
- Converts Coal, Oil and Unsatisfactory Gas burners into GOOD HEAT PRODUCERS.
- Burns artificial and mixed gases as well as natural gas.
- LUMINOUS FLAME type.
- Provides automatic heat at lowest equipment cost of any appliance on the market.
- Easily installed — Quickly inspected.

Write for descriptive literature

•

John Zink Company

4401 South Peoria

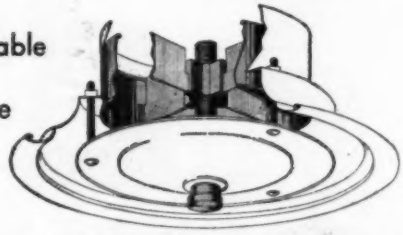
TULSA, OKLAHOMA

New York - Los Angeles - Detroit - Salt Lake City - Houston

Control of air direction and volume
as an aid to satisfactory supply air diffusion

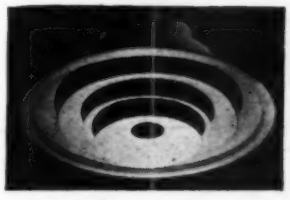
Whether they are used in heating, cooling, ventilating, or combined systems, KNO-DRAFT Diffusers can be adjusted quickly and accurately for system balancing and individual or seasonal requirements. As a result the factors of temperature variation, temperature fluctuation, drafts and noise can be minimized considerably.

Type K Adjustable Diffuser with Type D Volume Damper for supply air.



Pat. and [pat. pending

Any desired condition at your fingertip.



Type SR Adjustable Diffuser for supply and return air.

By simply turning the air adjustment screws (easily accessible from under the unit) the inner cone may be raised or lowered to secure any angle of air direction required. A built-in damper, with which either model can be equipped, varies the outlet aperture uniformly without affecting the outlet velocity or diffusion pattern. Thus, the air direction and volume of the same KNO-DRAFT Diffuser can be adjusted to be equally effective in expelling chilled air parallel to the ceiling or ejecting heated air downward to prevent stratification.

With KNO-DRAFT Adjustable Diffusers many engineers have been able to insure efficient air distribution, maximum premixing of room and supply air, noiseless and draftless diffusion and uniform temperature throughout the occupied zone. And they have been able to reduce labor and sheet metal costs by distributing large volumes of air at higher duct velocities in smaller, simplified ducts with fewer outlets, because KNO-DRAFT Diffusers permit the use of higher neck velocities.

The W. B. Connor Engineering Corp. maintains a staff of specialists and district representatives in leading cities to assist you with any air distribution problem.

FREE HANDBOOK

Contains clear sketches, charts, dimension prints and instructive text that simplify the selection and installation of air diffusers. For your copy write Dept. B-7.

W. B. CONNOR ENGINEERING CORP.

Air Diffusion — *Air Purification* — *Air Recovery*

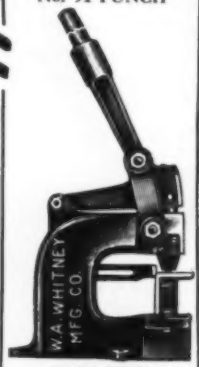
114 E. 32nd Street — **New York 16, N. Y.**

WHITNEY LEVER PUNCHES

No. 4B PUNCH

Length 8½ inches. Capacity ¼-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—1/16" to 9/32" by 64ths.

No. 91 PUNCH



CAPACITY

½-inch hole through ¼-inch iron; ¾-inch hole through 3/16-inch iron; 2-inch hole through ⅛-inch iron. Depth throat, 5 inches. Weight, 82 lbs.

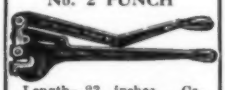
We have tools for every purpose needed by Sheet Metal Contractors.

Ask your Jobber

No. 1 PUNCH

Length—34 inches. Capacity — ⅝-inch hole through ¼-inch iron. Punches and dies in sizes from ⅛ to 9/16 by 64ths.

No. 2 PUNCH



Length—23 inches. Capacity — 5/16-inch hole through ¼-inch iron. Punches and dies in sizes 3/32" to ½-inch by 64ths.

No. 6 PUNCH

Length—26½ inches. Capacity — ¾-inch hole through 3/16-inch iron; especially adapted for button punching or templet work. Punches and dies ⅛" to 9/32" by 32nds.

CHANNEL IRON PUNCH

Companion to No. 3 Punch. Every part of the two Punches Interchangeable, including punches and dies. Capacity—¼-inch hole through ¼-inch iron.

W.A. WHITNEY MFG. CO.

636 RACE ST. ROCKFORD, ILL.

Narrow Edge Bending

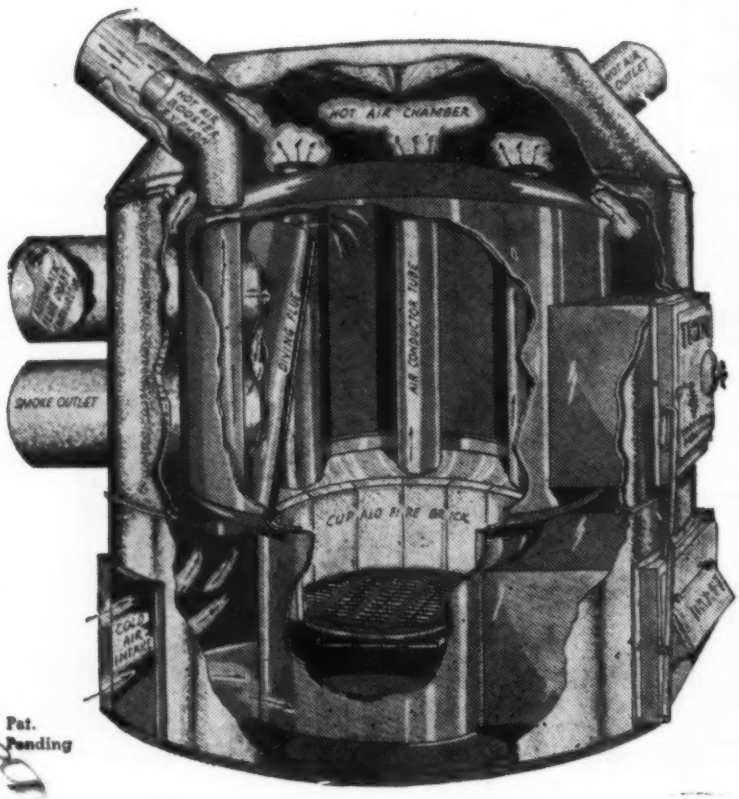
(*Continued from page* 113)

radial to embrace the circumference of the bead desired.

For this bead forming we can use the straight die shown at the right in Figure 11, or we can use any standard male die, but in the latter instance the bead formed will show slight marks, or "ribs," all depending on the "graduation" of the strokes and also on the grade of the metal worked. "Springy" metal will show less of the rib formation than does softer metal. In shops not specializing in bead formation and having only an infrequent call for making beads, a piece of tubing or a solid rod might be tack-welded to a piece of ½ inch wide material and this used for the bulb die. A still better means would be accomplished for this work by tack-welding (or bolt-securing) a strip of 12 gauge sheet to the side of the ½ material and to the side of the tube or rod, imitating the bulb die shown in Figure 11.

In shops manufacturing a specialty on a steady schedule it is much better to determine the exact dies to be employed in the special work, and order them from the manufacturer. In any specialty the die-sets will be few in number, and the dies will do accurate, specified work. But in shops manufacturing no one specialty in particular, and having calls for a great number of special formations which can be done in the press brake, it will be necessary for this shop to do some of its own die-building. These shop-made dies can be for temporary use, and do not need to cost much, but if ingeniously conceived they'll accomplish short run work equalling that done by special, factory-made dies.

Radiant TUBERATOR Heater



Pat. Pending

New Principle In Warm Air Heating

3 Revolutionary Features:

Open Dome Steel Fire Chamber
Radiant Heat Air Conductor Tubes
Automatic Flue Draft Carburetor

Scientifically Engineered

All Steel --- No Joints --- No Leaks

31 EXCLUSIVE FEATURES

For the dealer who wants greater profits with less sales effort by offering a product far better than anything ever offered by his competitors.

Manufactured by

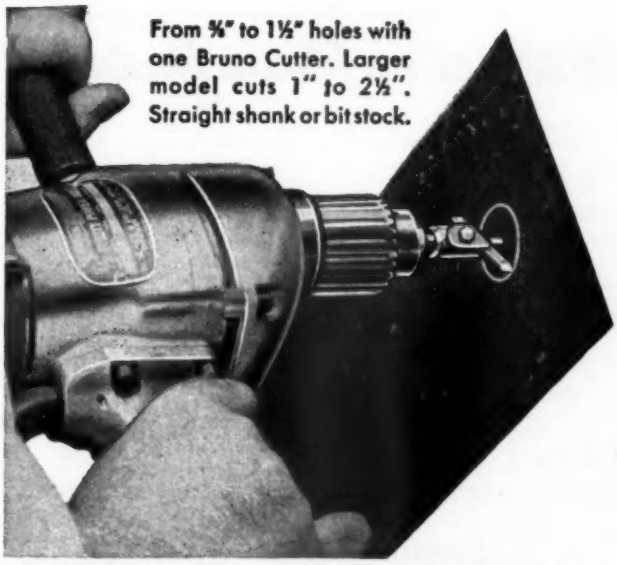
WHEELING FURNACE CORPORATION

MARTINS FERRY, OHIO

DEALERS WANTED

Write For Complete Information

Trade Mark



From ⅝" to 1½" holes with one Bruno Cutter. Larger model cuts 1" to 2½". Straight shank or bit stock.

Cuts Any Size Hole in METAL-WOOD-PLASTICS

In the shop or on the job, replace many fixed-radius cutters with Bruno. Makes clean, fast holes in sheet metal, boiler plate, light metal alloys, plywood, plastics, masonite, rubber, fibre and other materials. Easily and accurately set for any diameter in range of cutter.

Works well in Portable Drill, Hand Brace or Drill Press.

New uses every day for Bruno Cutters. High speed steel blade easily resharpened. Rugged construction. Designed by tool engineers. Ask your jobber, or write Bruno Tools, Beverly Hills, Calif., Dept. AA-9

No.100
⅝" to 1½"

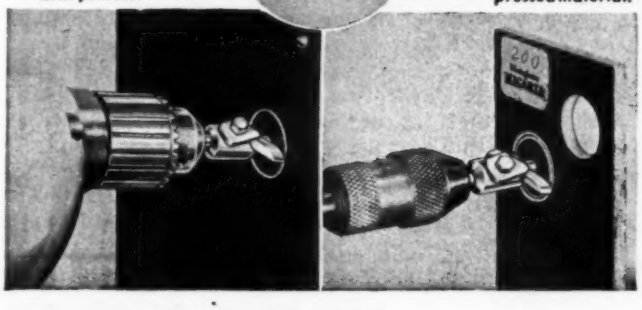
No.101-B
1" to 2½"

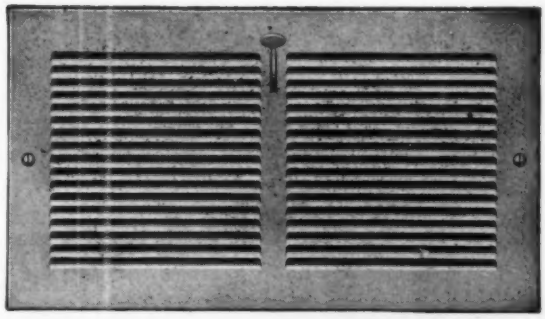
Model No.	Shank Size	Cutter Expansion Capacity	User's Price
100	¼" straight shank	⅝"-1½"	$3.00
100-B	Square Bit Stock	⅝"-1½"	$3.00
101	⅜" straight shank	1"-2½"	$5.00
101-B	Square Bit Stock	1"-2½"	$5.00

Ideal for electric drills and light drill presses.

BRUNO TOOLS

Cuts deep holes in wood or compressed material.





We Recommend the Economical, Efficient AUER AIRO-FLEX "7000 SERIES" REGISTERS

FOR downright VALUE, you'll go a long way to beat this Airo-Flex "7000" line of registers! This model is a simple, sturdy, moderate priced register, ideal for most forced air heating jobs. Of exceptionally nice appearance, it has single louvre and bendable fins, set when delivered at about 22° downward. Furnished for wall and baseboard registers and intakes. It's an efficient, easily installed register, which holds down costs WITHOUT sacrifice of essential quality.

Auer offers a complete line of floor, base, and wall registers and return faces, for gravity or air conditioning systems—including all air directional types. We also make flat metal grilles for all purposes where grille panels are needed.

Ask for Auer Register Book—
or special Grille Catalog "G"

THE AUER REGISTER COMPANY
3608 Payne Avenue — Cleveland 14, O.

AUER REGISTERS & GRILLES

For Air Conditioning *and* Gravity

Tharco Asbestos Furnace Cement performs an almost unbelievable safety job in a huge public utility plant where it is not broken down by temperatures as high as 2500°!

When a furnace cement will stand up under such conditions, you can be sure it will meet all of your requirements for long term heat resistance and adhesion.

The exclusive Armstrong formula by which Tharco Asbestos Furnace Cement is compounded calls for the finest materials obtainable. Specially prepared asbestos fibre makes Tharco stand up under intense heat and allows for expansion and contraction with the least danger of cracking, shrinking or loafing. Tharco adheres to both sides in a joint, making it gas-tight and smokeless. Tharco is easier to use, is packed in economical "on the job" size containers. Tharco is your safest bet, on every count, for furnace cement. Start using it now!

With the Manufacturers

The American Radiator & Standard Sanitary Corporation, Pittsburgh 30, announces the appointment of **William T. Read** as manager of their Washington sales office, and **William H. Baker, Jr.**, as assistant manager of their Pittsburgh sales office, effective September 1st, 1945.

Also, they announce the appointment of **Frank E. O'Callaghan, Jr.**, as a staff assistant in the General Sales Department, Pittsburgh, as of the same date.

Each of these men have had many years experience in the Company's Sales Organization.

News Items . . . . . .

Firebrick Freight Rates

Supplement 34 to Consolidated Freight Classification No. 16 in Items 5050-A, 5055-A and 5065-A, the carload ratings on house heating furnaces has been amended to include firebrick at the same carload rates that apply on the house heating furnaces. This amendment became effective on August 10, 1945.

Heretofore, while the industry could obtain a carload rate on the furnaces, the firebrick accompanying the furnaces was billed at the l.c.l. rate.—M. W. Bowen, Manager, Heating Department, Stainless & Steel Products Co.

◆

Oakland Plumbing & Heating Moves

T. C. Jones, doing business as the Oakland Plumbing, Heating and Sheet Metal Works for the past twenty years at 231 E. Nine Mile Road, Ferndale, Michigan, has moved his office to 405 West Saratoga Avenue, Ferndale 20, Michigan.

The shop and showrooms have been moved to 23591 John R Road, Hazel Park 20, Michigan, where they are making and installing air conditioning and gravity warm air heating, and ventilation.

◆

Kruckman-AFL-CIO Differences and Similarities

(*Continued from page* 76)

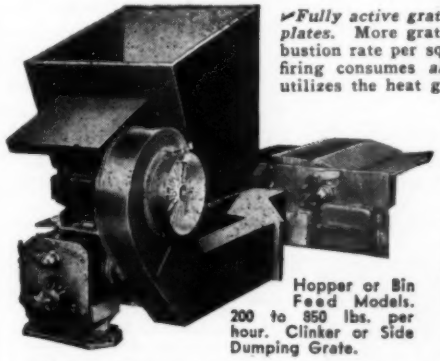
to reflect the influence of State Secretary Byrnes, who is considered the Cardinal Richelieu of this Administration. But the out and out New Deal zealots, who could be quite arrogant in promulgating their thoughts and wishes in the days of Mr. Roosevelt, now have no standing among the realists who represent the mechanics of the Administration. For this reason the very leftish CIOers no longer have influence in the agencies and department where they were a power in the days when the New Deal philosophy was an active element in making the Government tick. They reached high power, probably their highest, in the most vivid days of the New Deal because their ideologies either ran parallel, or were identical, with the New Deal program.

The Political Action Committee of CIO apparently was the highwater mark. That was the time the politicians "cleared it with Sidney." Two years ago it was practically all-powerful in politics. It was built on the foundation of the one-party system of the South, and

FREDERICK STOKERS

. . . Tops in Efficiency

You will find — in the Frederick — the solution to your heating problems, because the Frederick (1) gives maximum fuel combustion (2) feeds coal evenly (3) prevents air leakage. This efficient performance is due to Frederick *engineered* features —



Hopper or Bin Feed Models. 200 to 850 lbs. per hour. Clinker or Side Dumping Grate.

✔*Fully active grate surface . . . no dead plates.* More grate area with low combustion rate per square foot. Underfeed firing consumes *all* the coal and fully utilizes the heat giving gases.

✔*Continuous speed type transmission.* An even coal feed is provided at all time.

✔*Completely enclosed wind boxes and mechanism.* Eliminates possibility of air leakage through brickwork with resultant loss in efficiency.

Send for stoker catalog. Engineering consultation available without obligation.

We also manufacture fine Centrifugal Pumps . . . guaranteed to do the job for which they are sold.

THE Frederick IRON & STEEL CO.
Frederick, Maryland

STOKER SPECIALISTS SINCE 1918

Properaire
AIR MOVING EQUIPMENT

BLOWERS
EXHAUSTERS
FANS

for Homes
Stores
Offices
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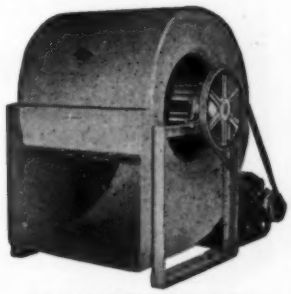
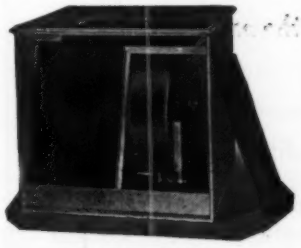
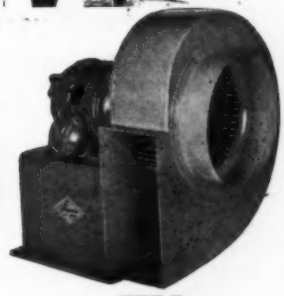
Institutions



"B" ASSEMBLY Belt Drive



SERIES 2000
Insulated Package Units



TYPE E
Direct Drive

Ask your Jobber to write for "Blower File" FREE

GRAND RAPIDS DIE & TOOL CO.
1202 Godfrey Ave., S. W., Grand Rapids 2, Mich.

TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.

Preloaded oil-proof cushion built into the bearing.
Ball-and-socket design.
Write for samples and complete information.

TRIANGLE MANUFACTURING CO.
392 DIVISION STREET OSHKOSH, WISCONSIN

ATH-A-NOR

FURNACES AND PARTS

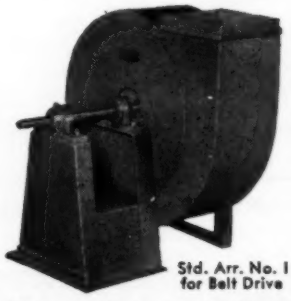
For more than 50 years the name Ath-A-Nor has meant top quality and best performance in furnaces. Economy and efficiency are the best-known qualities of the Ath-A-Nor furnace and of Ath-A-Nor furnace repair parts. Buy and install Ath-A-Nor for best results and greatest fuel economy!

MAY-FIEBEGER COMPANY

MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS

NEWARK, OHIO

the concentration of votes in the cities. There were actually no Republican candidates for Congress in many Southern States, and in a number of States no Republican votes were cast. Over three-fourths of the Democratic Congress was elected in the North and the West with votes cast in cities of 100,000 population and over. Statistics reveal that 5 cities with a million or more population elected more than one-third of the Congress, and that 7 cities in 7 States decided the last Presidential election: New York, Chicago, Philadelphia, Detroit, Baltimore, St. Louis, and Jersey City. Portland, Oregon, and Manchester, N. H., cast the Democratic vote that carried those States; and two cities in Massachusetts and Minnesota, carried those States for the Democrats. Fifteen cities which voted solidly Democratic, or PAC, have 40% of the foreign-born population; while New York, Chi-



Std. Arr. No. 1 for Belt Drive

New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street **Milwaukee, Wis.**

Perforated METALS

H. & K. ENLISTS

Industrial perforations include round, oblong and many shapes as used for screening, grading, draining and guard purposes.

Ornamental perforations include patterns suitable for architectural grilles, radiator enclosures, metal furniture, etc.

Write for further information.

ANY METAL—ANY PERFORATION

The Harrington & King PERFORATING Co.

5649 Fillmore St., Chicago 44, Ill. **114 Liberty St., New York 6, N.Y.**

IF YOUR ORDERING A NEW CAR

YOU KNOW WHAT WE MEAN!

There's a waiting line today for most desired products, as you know. And the only way to get delivery at the earliest possible date is to place orders at once.

We'd like to fill orders as we did before the war and as we shall later on. But right now, like so many others, we must do the best with what we have. You'll get your Lockformer sooner by ordering sooner. We know you'll understand—and thank you sincerely for your patience.

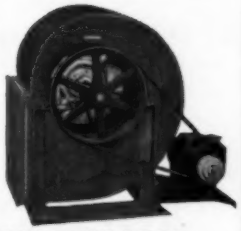
The LOCKFORMER Co.

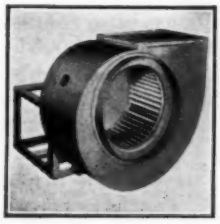
4615 Arthington St. **Chicago 44, Illinois**

YOUR BLOWER Requirements

AVAILABLE AT

Schwitzer-Cummins Company





★ **BLOWERS FOR EVERY PURPOSE**

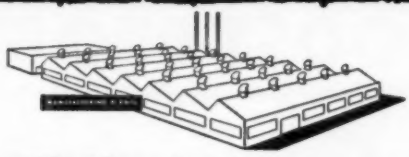
Double Inlet and Single Inlet

HY-DUTY Blowers, 9¾" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½" to 50".

★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

VENTILATING DIVISION
SCHWITZER-CUMMINS COMPANY
1125 MASSACHUSETTS AVE. • INDIANAPOLIS 7, U. S. A.



Ventilation jobs come easy

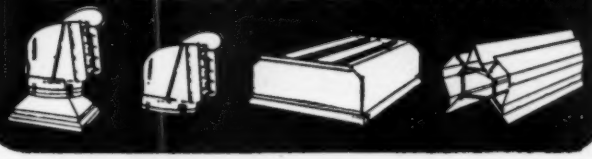
when you demonstrate the superior design and construction of

Swartwout AIRMOVERS

All Swartwout Ventilators are carefully designed for lowest possible air flow friction—are sturdily constructed of high-grade materials. Easy to install, they bring you credit for good judgment in equipment selection. Write for details.

THE SWARTWOUT COMPANY
18511 Euclid • Cleveland 12, Ohio

Swartwout VENTILATION SPECIALISTS



MASTER
TEMPERATURE CONTROLS

The Shape of Things To Come

Since very early in the war our facilities and practically our entire capacity have been used in the production of important electrical items for the Army and Navy.

Anticipating the termination of our war activities and recognizing the accumulated need for large production of better temperature controls, we have been busy improving our standard items and developing and testing new ones to meet the urgent demand of that new market.

We can't even tell you about these new things now, but when restrictions are removed, we believe you will be glad to share the opportunities represented by these better-than-ever Master controls.

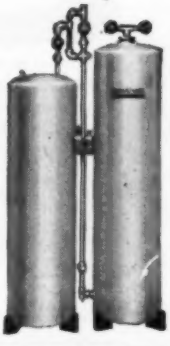
WHITE MANUFACTURING CO.
2368 University Ave., St. Paul, Minn.

WAYNE HOME EQUIPMENT

DISTRIBUTOR - DEALER

PARTNERSHIP PLAN

- **COMPLETE LINE OF HOME EQUIPMENT**
- **BROAD ADVERTISING PROGRAM**
- **SELLING HELPS THAT SELL!**



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WAYNE WATER SOFTENERS

Engineered for—

- **DEPENDABILITY**—positive softening action—easy to maintain.
- **HIGH EFFICIENCY**—more soft water—less cost.
- **APPEARANCE**—harmonizes with modern basements.

You Make GREATER PROFITS in the Popular Price Range!

WAYNE OIL BURNER COMPANY, Fort Wayne 4, Indiana

Another New Unit Will Be Featured Next Month—Watch for it.

BOOST PROFITS

Save VITAL FUEL

You can earn extra profits with a Grand Rapids Furnace Cleaner — and help save precious fuels, now more scarce than ever. Merchandising through your service department is the answer, for it not only enables you to sell new equipment while you clean but also keeps your customers' furnaces in the tip-top repair so essential to economical operation.

Built to give you dependable, efficient service for many years, the Grand Rapids Furnace Cleaner does a complete, thorough cleaning job, removing all dirt and dust from furnaces, boilers, chimneys, stokers, oil burners and heaters — even the entire basement if desired. It's sudden death to nasty "plug up" conditions. Write today for full information.

GRAND RAPIDS FURNACE CLEANER
MODEL OF The Doyle VAC-IT

DOYLE VACUUM CLEANER CO., 227 Stevens St., S. W., Grand Rapids 7, Mich.

"Use CLARAGE PRODUCTS and Repeat Business Comes Easy!"

This nationally known, nationally accepted fan equipment helps you land desirable jobs—helps you KEEP desirable customers. It will pay to figure with us on any air handling or conditioning project. Write for catalog covering complete Clarage line of fans, blowers, unit heaters, coolers and conditioning units.

FURNACE FANS

UNIT HEATERS

EXHAUST FANS

ARMY-NAVY

COMPLETE AIR CONDITIONING • COOLING • VENTILATION • FACTORY HEATING • MECHANICAL DRAFT • FANS and BLOWERS for INDUSTRIAL NEEDS

Clarage Fan Company Kalamazoo, Mich.
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

cago, Philadelphia, Baltimore and Detroit have the overwhelming Negro vote. In New York State, Sidney Hillman still heads the American Labor Party. The PAC organization, which brought them to the polls, has never been equalled in the machine-perfection of detailed vote-getting regimentation.

Typical AFL-CIO Differences

Here, in Washington, it is the opinion that the difference between the CIO and the AFL is more definitely ideological and political than it is fundamentally a difference over the pattern of organization: craft vs. over-all industrial integration. The AFL, and John L. Lewis and his Miners, and, presumably, the Railroad Brotherhoods, still adhere in the main to the unpolitical and nonsocialistic formulae of Gompers. AFL regards its function as primarily economic. AFL's purpose is to sell Labor for the best price that

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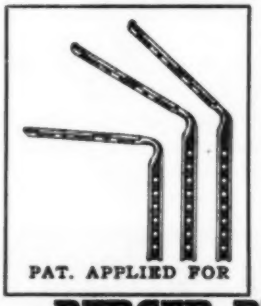

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33⅓% STRONGER

IMPROVEMENT IS APPLIED TO No. 15—SQUARE, No. 12—½ PITCH, AND No. 25—¼ PITCH.

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MULTI-PURPOSE TOOL

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★ The Saw-Chief attaches to electric and air drills, or may be driven by flexible shaft. Hack-saw blade in holder reciprocates rapidly with a 7/8" stroke. Cuts all metals—every gauge, wood, plastics, other materials. Eliminates slow, tiresome hand-sawing operations. Reaches into hard-to-get-at places with ease. Insert ordinary machine file for power-filing operations. It's portable . . . carry it from job to job.

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Compact . . . designed for convenient installation . . . this new streamlined model offers greatly reduced air resistance.

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can be obtained, with the best possible working conditions, and the most advantages that can be obtained from management, with or without Government aid.

In essence, AFL leaves politics and ideologies to the individual determination of the person. They apparently deem the Capitalistic system, policed by a cooperative Democracy, as a sound working pattern. They have little interest in the active problems of the adventure upon which the Labor party of Britain is embarked.

The CIO, on the other hand, reveals its current drift by the manner of its support of the Full Employment Bill. Reid Robinson, president of the International Union of Mine, Mill, and Smelter Workers, CIO, appeared before the Murray Committee and demanded that the postwar mining industry be subsidized, more or less permanently by the Federal Government. R. J. Thomas, vice president of the CIO, demanded that

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BETTER FAN satisfaction is assured when you equip your fans with Burden Plastic Blades. These quiet propeller type modern blades have a much lower noise level. They have longer life and weigh only 1/5th to 1/4th as much as metal blades. Yet they have the same structural strength. Burden Blades have been tested from—60 to 300 F. They are resistant to corrosive action. Low moisture absorption.

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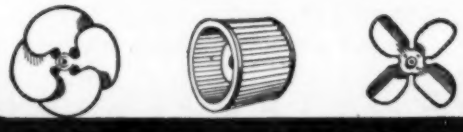

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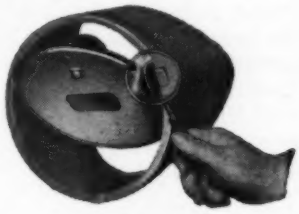

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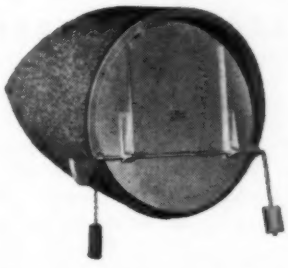
Standard round industrial model can be mounted on side or top of pipe and applied to steel or brick breechings. Perfectly balanced at factory. BALL-BEARING EQUIPPED.



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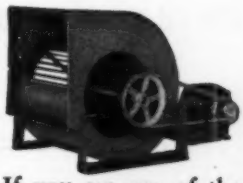

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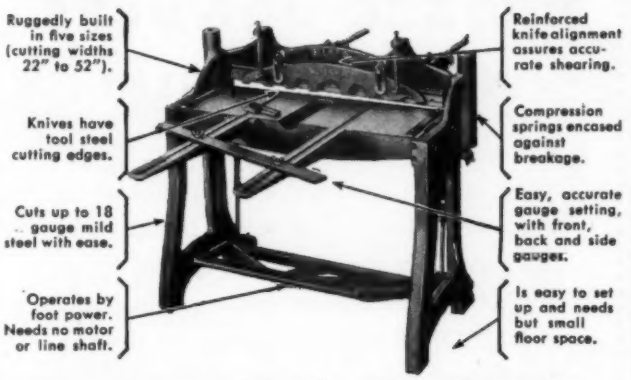
8 Reasons for Selecting famco Shears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Knives have tool steel cutting edges.
Cuts up to 18 gauge mild steel with ease.
Operates by foot power. Needs no motor or line shaft.
Reinforced knife alignment assures accurate shearing.
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Easy, accurate gauge setting, with front, back and side gauges.
Is easy to set up and needs but small floor space.

There are many reasons for selecting Famco *Foot Powered* Squaring Shears. They require small investment and low operating cost . . . are powerful yet consume no power. Write for descriptive folder today.

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• BALLOFFET nozzles, NOW BY DELAVAN, are being produced in increasing quantities now that our production for war has stopped.

We are sorry we have held you up . . . hope to meet all your needs soon.

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If you are going to share in that tremendous postwar stoker market, now is the time to begin, and in making a choice, remember that *extra values are always easier to sell.*

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STOKERS OFFER EXTRA VALUES

Sizes to meet various requirements.

● A stoker engineered to do a better job, for more years, by a 78-year-old company. ● Merchandising experience that understands the stoker dealer's needs and selling problems and knows how to help him solve them. ● A name with an established reputation in the stoker field.

Gehl Industrial Stokers are selling NOW to office buildings, hospitals, schools, churches, hotels and other places that use 25 tons or more of coal per season. There is a big backlog demand for Gehl domestic models as fast as they are available.

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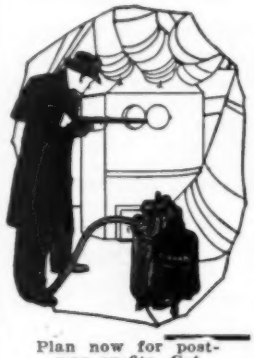
A GEHL WINS FRIENDS WHEREVER IT GOES

Congress provide a law which would pay all workers released by cutbacks at the rate of $25 a week beginning with August 15. The CIO Textile Workers have repeatedly insisted the plants which may come to a standstill, or which may have less work, should be taken over, and operated for consumption, not profit, by the Federal Government.

"Gov't Should Operate War Plants," CIO

Philip Murray, president of CIO, has asked the Surplus Property Board and the RFC, to put into operation specifically the seven aluminum plants that were closed, or will be closed in the near future, and to operate them as Government enterprise, employing 20,000 persons. Murray, in testifying before the Senate Banking and Currency Committee on behalf of the Full Employment Bill, startled those present by these words: "Right now the passage of the Full Employ-



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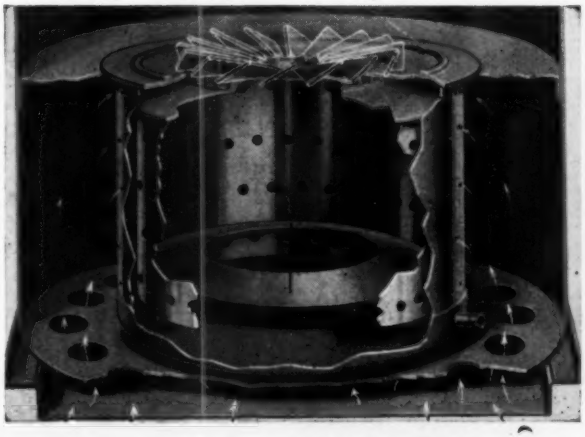

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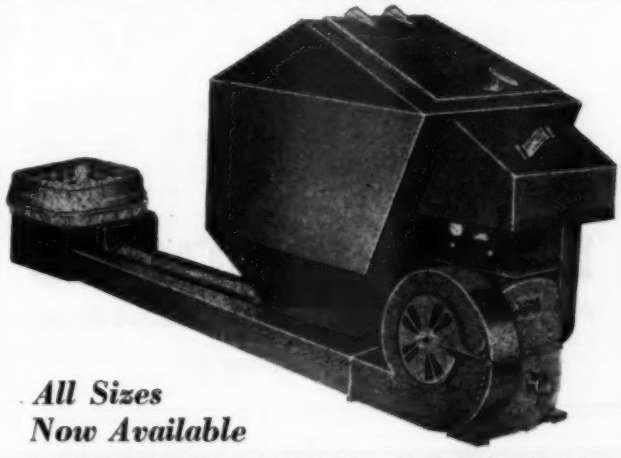

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ment Bill would be acceptable. But failure will bring stronger questions from the people. They are coming to my desk. Resolutions are being passed by local unions. Everybody knows about the $15,000,000,000 worth of fine war plants and machinery. Workmen don't think of them as figments of an accountant's ledger; they think of them as hours of labor applied in earning wages; as units of goods turned out. The average citizen is going to ask, 'Why doesn't the Government hire engineers and managers to operate these factories the way it was done during the war?' It's going to be impossible to answer that one with talk of 'confidence' and similar chatter. It takes cash to pay the landlord and the grocer. If you fail to give workers jobs at good wages, turning out the things we all need, the people will recognize the failure of private capitalism and demand Government operation of industry."

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47 STROKES PER MIN.
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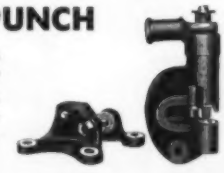
Powerful ball bearing screw action gives tremendous punching power in a light-weight tool. Capacity, ½" hole in ¼" iron. Weight only 20 lbs. Bench base available for fixed operation.



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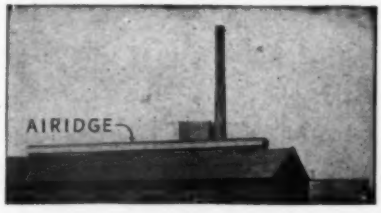

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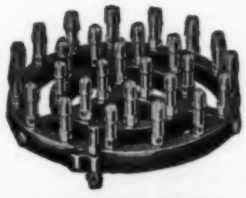

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Automatic Shutter With Aluminum Louvers

Because they are so light, the aluminum louvers are exceptionally sensitive to air currents, opening the instant the fan or blower starts. And when closed they are exceptionally tight-fitting because every louver is weather-stripped. All sizes from 10" to 60" square — also rectangular.

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"ELGO" TYPE AUTOMATIC SHUTTER
Front View (Closed)

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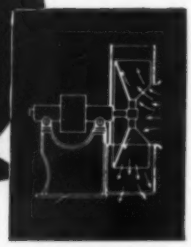

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Write for pattern circular giving full information. Mention American Artisan.

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USE ONLY THE ORIGINAL

Vernois furnaces give such fine performance because every part is carefully engineered and manufactured only for Vernois furnaces. When you repair a Vernois furnace insist upon Vernois parts. That is the way to do a satisfactory job! Order original Vernois parts direct from us.

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Secretary of Commerce Wallace told the Committee the Bill "would give legislative recognition to the right to a useful and remunerative job in the industries or shops or farms or mines of the nation. *The Federal Government would, for the first time, recognize its over-all responsibility for assuring opportunity of employment to all who are able and willing to work.* Business management should not be saddled with the responsibility for maintaining full employment. We cannot afford a do-nothing policy on the part of the Government because that would inevitably lead once again to recurring depressions. The only alternative to the Full Employment Bill is a planned economy which imposes specific controls on the production and distribution methods of business."

It should be every business man's interest to note this: the jungle of phrases and fog of words in the discussions, either in or out of Congress, try to throw

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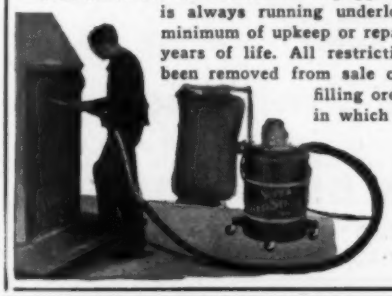
• Outstanding dependability and trouble-free operation of Red Streak Furnace Cleaners are assured by the big oversize motor with which all Red Streaks are equipped. This big rugged motor is always running underloaded which means the minimum of upkeep or repair cost and many added years of life. All restrictions and priorities have been removed from sale of Red Streaks. We are filling orders strictly in the order in which they are received.



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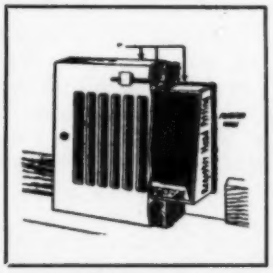

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Plus 5 to 10 minutes installing time per register; your charge to Customers for 12 Registers	$24.80
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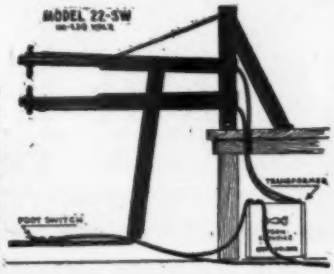
FERN
Klondike Spot Welder

Model 22SW Bench Type



Operates on any ordinary 30 or 60 amp. electric service. Spot welds 20 gauge or lighter metal, cold-rolled steel, hot-rolled steel (Clean, Pickled), Stainless Steel, Nickel Plated Steel, Nickel Alloys, Monel Metal, Silicon Bronze Type Alloys, Pure Zinc and Nickel Silver, Unpickled Hot-Rolled Steel, Aluminum and its Alloys, Tin Plate, Terne Plate, Chrome Plate, Galvanized Iron and other coated materials. The Fern Klondike Spot Welder costs but a third of other spot welding equipment but does the work of machines which cost three times as much. This equipment can be transferred from job to job or can be used on a bench in shop. Can be purchased in an 18 or 20 inch throat, very simple to operate.

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FOR STOKERS
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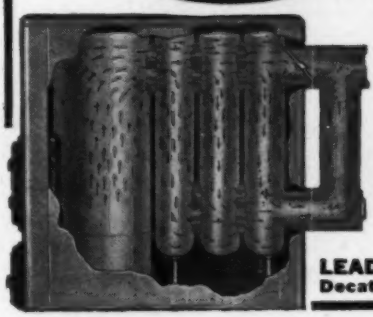
50,000 to 200,000 BTU's



Patented Damper Uses All the Heat in the Added Heating Surface *THAT IS SOMETHING TO SELL*

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up a smoke screen to blanket the issue; but the fact remains that the Full Employment Bill is actually in effect designed to place authority in the agencies of Government ultimately to use the resources of the nation, private as well as public, to provide some sort of employment to every one who will take a job. They say the law will protect and preserve private enterprise, and free competition. On the other hand the Law will compel Government to conduct undetermined industries to make work. It is a puzzle to understand how a private industry can be free with even an indirect competitive Government industry. No one can compete with the Post Office service. The Full Employment Bill opens the way to socialization because it actually permits Government to engage in any industry or commercial operation necessary to assure full employment.

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Used exclusively by many fabricators of Stainless Steel and other metals. Flows freely without rolling up. Provides even coverage. Flows through lap joints without tinning before being lapped. Forms perfect bond. Has no strong corrosive action. Odorless—no injurious fumes.
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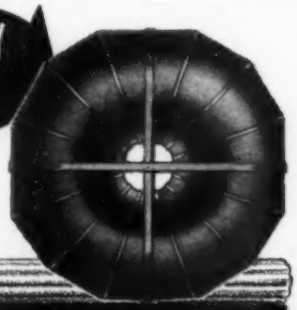

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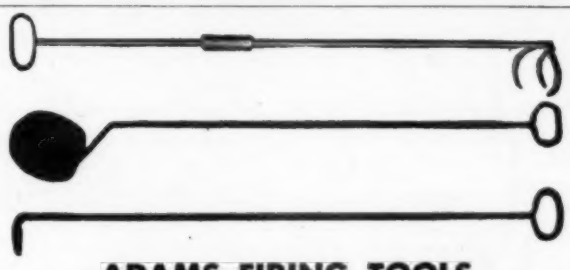

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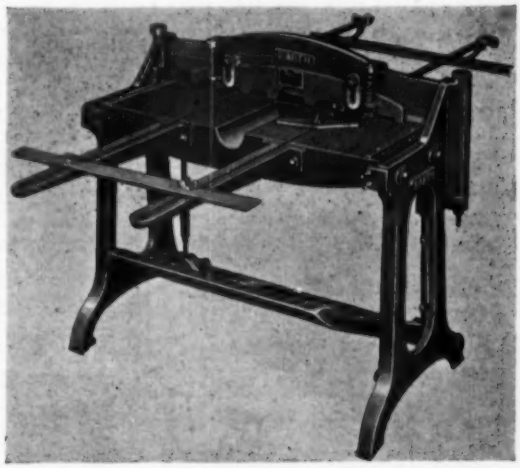

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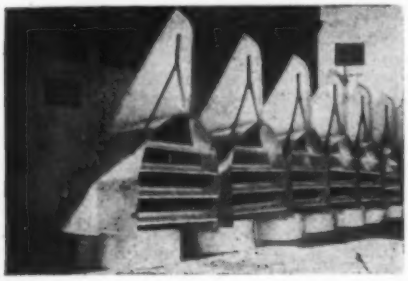

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Tinners' Mallet	Bust-Off Chisel	Remit Today

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Experienced men for shop work and for installing dust and fume control systems, ventilating and air handling systems, ovens and other industrial sheet metal equipment in factories, foundries and mills. Steady employment assured to those who can qualify. We also have openings for a few high grade apprentices.
Give complete details in first letter including age, education, experience, layout ability if any, and if any objection to out of town work.
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Furnace installers
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Steady work—top wages
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1—48" Slip Roll, 16 gauge or lighter.
1—48" Square Shear, 16 gauge or lighter.
1—Spot Welder.
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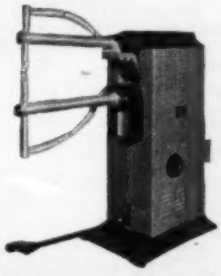

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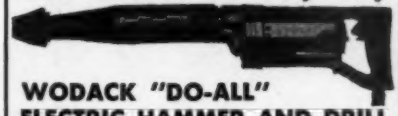

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ELECTRIC HAMMER AND DRILL

Saves time and money installing expansion anchors. Drills concrete to 1⅜" dia.; metal to ¾". Two tools in one. Easy to maintain. Universal motor. Star drills in 17 diameters. Also chisels, bull points, etc. Write for bulletin No. 644.

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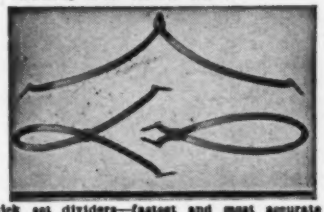
Will Cut Soldering Costs In Half
No More Changing of Irons

Always the Right Amount of Heat for the lightest as well as the heaviest jobs. Especially adaptable for soldering with Victory Solder.



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THE COMPLETE DRIVE CLEATING MACHINE

SAVES MORE TIME per joint of pipe, over ordinary hand methods, than any other machine used on square pipe work . . . and it is USABLE MORE OFTEN per job, because it edges the pipe and makes drive cleats to join them together.

NOW TWO SIZES

NO. 12
Takes All Sizes Up to 12"

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Write for More Information.

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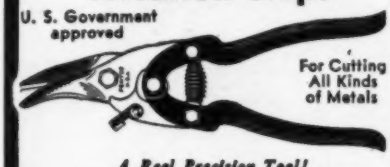

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Right and Left Cut

Blades made from alloy steel hardened and tempered for rough use. Will cut with ease all grades of steel. Side locking feature that will not interfere with cutting blades. Case hardened bolts. Made in four different types. Write for catalog S.

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In Stock — Immediate Delivery

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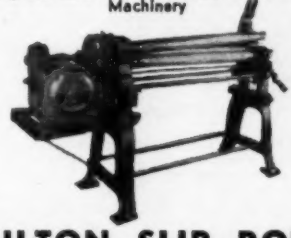

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These machines are new and of our own manufacture. 10 ga. and lighter, 3' to 10' long. Compact, heavy duty, conservatively rated. Power or hand operation. Milton geared slitting shears—new—capacity 3/16 iron and lighter. Length of cutting blades 10 in. Dealer representatives wanted.

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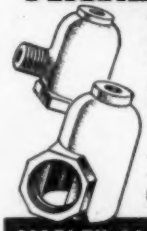
Large and complete stocks! IMMEDIATE SHIPMENT

MARLEY SPRAY NOZZLES



"Tops" for Air Washing, Humidifying Brine Spray Lofts, etc. Marley nozzles lead all in sales and in profits to you.

* Finer, more uniform spray
* Effective operation at Low Pressures * No internal parts

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OLSON BROS

SHEET METAL ROOFING HEATING CONTRACTORS

ATLANTIC 2360

2631 ST. MARYS AVE.
OMAHA, 3, NEBR.

February 9, 1945

Minneapolis-Honeywell Regulator Co.,
106 No. 15th St.,
Omaha, Nebraska.

Att: Mr. R. C. Harris

Gentlemen:

We would like to have you know that we are satisfied in our own minds that Moduflow is the control system that should be used on all residential heating systems.

Frankly we were skeptical of the claims that you made for Moduflow. We naturally were interested in this system, but because of past experience we wanted to try it out before we recommended it to our customers. A system was installed in two of our homes, one was a gas fired system, the other oil fired. We found it made our homes heat more evenly and eliminated the cold feeling that existed just before the thermostat calls for heat.

After experiencing these results in our own homes, we contacted a number of our old customers. In a relatively short time, we made 36 sales and every installation has proven to be very satisfactory.

Our only desire is that we would like to have more units to sell because there is such a demand for this type of control system.

Very truly yours,

OLSON BROS.

Myron S. Olson

mso:mk

FORTY-SIX YEARS OF ENGINEERING SERVICE

THEY SOLD THEMSELVES ON MODUFLOW ...THEN SOLD THEIR CUSTOMERS!

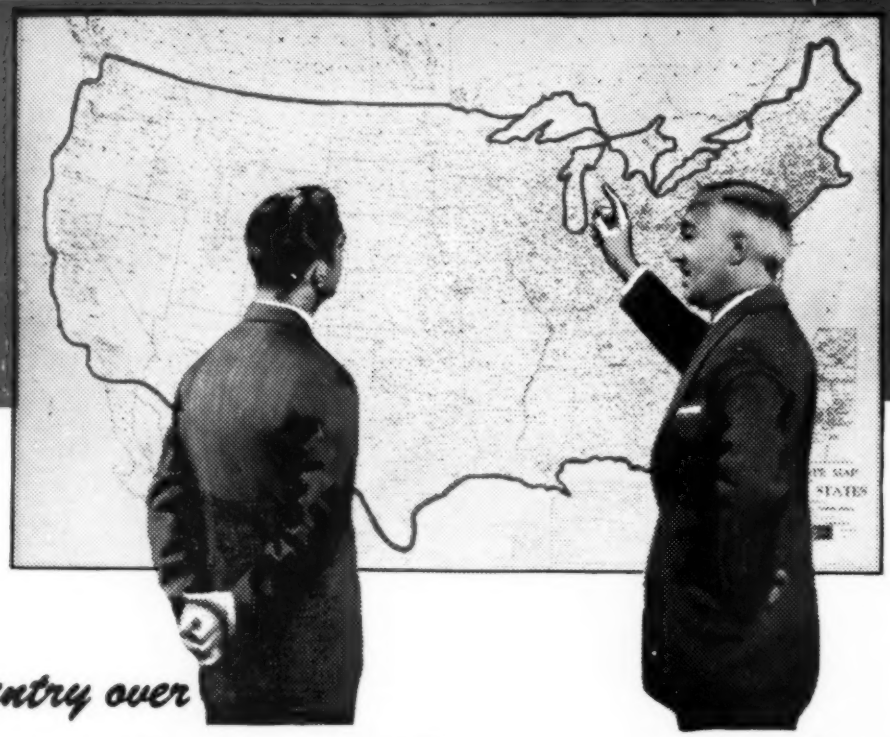
OLSON BROTHERS are heating contractors in Omaha. After testing Moduflow in their own homes, they made 36 Moduflow sales to their old customers in a relatively short time.

This shows the sales potentialities of this amazing system of temperature control. Our hats are off to this enterprising firm for the job they are doing in their territory.

You, too, can capitalize on our national advertising and the natural sales appeal of Moduflow. Thousands have received their copy of our "Engineering Guide of the Moduflow Control System." A post card will bring you your copy without delay. Minneapolis-Honeywell Regulator Company, 2726 Fourth Avenue South, Minneapolis 8, Minnesota.

MINNEAPOLIS Honeywell

CONTROL SYSTEMS



The country over

3 out of 4 of the newer homes are AIR FILTER prospects

YES, in 75 per cent of the newer homes air filters are used in heating or air conditioning systems. This means that filters should be changed at least twice a year to save fuel, to make conditioning systems operate efficiently. This market is wide open for you. Cash in on this opportunity for volume and profit with Research Air Filters.

It pays to feature

RESEARCH AIR FILTERS

Proven best by every test.... Research Air Filters build repeat sales. Illustrated is the No. 200 series—two permanent wire grids with removable RIP-CLEAN FILTER PADS between. Pads are self-sealed guaranteeing maximum filtering efficiency.

Clean Filters Save Fuel

Tests show that changing to clean filters saves as much as 7% of fuel consumption. This is of vital importance to every home-owner in the face of threatened fuel shortages for this year. Send for a free copy of Research Products bulletin on this series of tests—it will convince every prospect that he should buy new Research Air Filters from you.

Send for Free Sales Helps

They're yours for the asking—newspaper mats, direct mail material, radio spot copy, posters, envelope stuffers, blotters, equipment labels, record card and replacement guide of filter sizes.

RESEARCH PRODUCTS CORPORATION
MADISON 3, WISCONSIN